Notes

Current as of 5/5/17.

The purpose of this summary is to provide a reference of BART and RP controls that have been approved as either SIPs or required as FIPs. The main point is to illustrate what combinations of cost and visibility benefit have been found to be acceptable by States and EPA (SIPs and FIPs). The listing focuses is on new controls that were determined to be BART or RP. BART and RP determinations that did not result in new controls, including CAIR/CSAPR, are omitted. Fuel restrictions (e.g., lower S fuel oil) with no cost/visiblity data were omitted. Incorporation into PR/LTS of reductions from other regulatory drivers were typically not incorporated (MANE-VU "ask" RP/LTS is an exception).

Information was based on what information was present in the FRs. Blanks indicate that the information was not present. TSDs were not typically consulted. Occasionally Internet searches provided additional information on source sizes and/or fuels burned.

The FR citation typically includes both the proposal and final for all significant publications that related to the control listed. Comment period extensions, public hearing announcements, NODAs, and other insignificant actions to the selection of BART or RP controls were omitted.
There is a separate listing for each pollutant of each unit if additional controls or upgrades to existing controls were required.
Comments often contain information on controls that were rejected.
Determinations are based on final actions unless otherwise noted. If "Y" is indicated in the "Final Decision (Y/N)" column, it indicated a final action has been published - not that all litigation has been settled.
Under "BART/RP," "BART alt" is a BART alternative program that typically includes non-BART soruces.
If done under the RP and/or LTS provisions of the RHR the control is listed as "RP."
"SIP" means that the action approved the state's SIP submittal. "FIP" means the action was done under a FIP.

Under "Control," only additional controls that are required are listed. For example, a unit may already have LNB and OFA, but if BART requires the addition of a SCR then only SCR would be listed. Also, "upgrade" means any improvement to an existing control.
Under "Primary Fuel," "coal" can be any type of coal or lignite.

No attempt was made to distinguish between gross and net reported unit sizes (MW). If this information was not present in the FR, it was added based on reported values. Unit size is intended to be used as a general point of comparison between units.
The litigation columns have not been filled out as of the date of this revision.

All State and Navajo Nation Regional Haze Federal Register actions were reviewed. If a State Federal Register action does not appear in the listing tab, it is because it did not require any new controls.

Alabama	AL
Alaska	AK

Arizona	AZ
Arkansas	AR
California	CA
Colorado	CO
Connecticut	CT
Delaware	DE
Florida	FL
Georgia	GA
Hawaii	HI
Idaho	ID
Illinois	IL
Indiana	IN
Iowa	IA
Kansas	KS
Kentucky	KY
Louisiana	LA
Maine	ME
Maryland	MD
Massachusetts	MA
Michigan	MI
Minnesota	MN
Mississippi	MS
Missouri	MO
Montana	MT
Nebraska	NE
Nevada	NV
Navajo	Navajo
New Hampshire	NH
New Jersey	NJ
New Mexico	NM
New York	NY
North Carolina	NC
North Dakota	ND
Ohio	OH
Oklahoma	OK
Oregon	OR
Pennsylvania	PA
Rhode Island	RI
South Carolina	SC
South Dakota	SD
Tennessee	TN
Texas	TX
Utah	UT
Vermont	VT
Virginia	VA
Washington	WA
West Virginia	WV

Wisconsin	WI
Wyoming	WY

Acronym	Meaning
30 BOD	30 Boiler Operating Day average
30 day roll	30 calendar day rolling average
ASOFA	Advanced Separated Overfire Air
ATF	Air To Fuel ratio
BART	Best Available Retrofit Technology
BOOS	Burners Out Of Service
CBI	Confidential Business Information
CDS	Circulating Dry Scrubber
DSI	Dry Sorbent Injection
ECC	Enhanced Combustion Control
EGU	Electricity Generating Unit
FIP	Federal Implementation Plan
LNB	Low NOx Burner
LSD	Lime Spray Dryer (see SDA)
MOFA	Modified Overfire Air
NID	Novel Integrated Desulfurization
NSCR	3 way Non-selective Catalytic Reduction
OFA	Overfire Air
PJFF	Pulsed Jet Fabric Filter
PPF	Pellitized paper fuel
PRB	Powder River Basin subbituminous coal
RB	Rich Burn (for RICE)
RICE	Reciprocating Internal Combustion Engines
RP	Reasonable Progress
S	Sulfur
SCR	Selective Catalytic Reduction
SDA	Spray Dryer Absorber
SIP	State Implementation Plan
SNCR	Selective Non-catalytic Reduction
SOFA	Separated Overfire Air
TDF	Tire derived fuel
TIP	Tribal Implementation Plan
tpy	Tons Per Year
ULNB	Ultra Low NOx Burner

State	FR Citation	BART/RP	SIP/FIP?	Final Decision (Y/N)?	Unresolved Litigation (Y/N)?	Litigation citation	Source Name
AK	77 FR 11033, 78 FR 10547	BART	SIP	Y			Healy Unit 1
AZ	77 FR 42834, 77 FR 72512	BART	SIP	Y			Apache Unit 1
AZ	77 FR 42834, 77 FR 72512	BART	FIP	Y			Apache Unit 2
AZ	77 FR 42834, 77 FR 72512	BART	FIP	Y			Apache Unit 3
AZ	79 FR 56322, 80 FR 19220	BART alt	SIP	Y			Apache Unit 2
AZ	79 FR 56322, 80 FR 19220	BART alt	SIP	Y			Apache Unit 3
AZ	77 FR 42834, 77 FR 72512	BART	FIP	Y			Cholla Unit 2
AZ	77 FR 42834, 77 FR 72512	BART	FIP	Y			Cholla Unit 3
AZ	77 FR 42834, 77 FR 72512	BART	FIP	Y			Cholla Unit 4
AZ	81 FR 46852, 82 FR 15139	BART alt	SIP	Y			Cholla Unit 2
AZ	81 FR 46852, 82 FR 15139	BART alt	SIP	Y			Cholla Unit 3
AZ	81 FR 46852, 82 FR 15139	BART alt	SIP	Y			Cholla Unit 4
AZ	77 FR 42834, 77 FR 72512	BART	FIP	N			Coronado Unit 1

Source Type	Primary Fuel	Size if EGU (MW)	Pollutant Controlled	Control	Emission Limit
EGU	coal	25	NOx	SNCR	0.2 lbs/MMBtu
EGU	gas	85	NOx	LNB + FGR	0.056 lbs/MMBtu
EGU	coal	204	NOx	SCR+LNB+OFA	0.07 lbs/MMBtu
EGU	coal	204	NOx	SCR+LNB+OFA	0.07 lbs/MMBtu
EGU	coal	205	NOx	convert to gas	0.085 lbs/MMBtu
EGU	coal	206	NOx	SNCR	0.23 lbs/MMBtu
EGU	coal	300	NOx	SCR+LNB+OFA	0.055 lbs/MMBtu
EGU	coal	300	NOx	SCR+LNB+OFA	0.055 lbs/MMBtu
EGU	coal	425	NOx	SCR+LNB+OFA	0.055 lbs/MMBtu
EGU	coal	300	NOx	retirement	
EGU	coal	300		retire/switch to gas by 7/31/2025	0.22 lbs/MMBtu
EGU	coal	425		retire/switch to gas by 7/31/2026	0.22 lbs/MMBtu
EGU	coal	411	NOx	SCR+LNB+OFA	0.065 lbs/MMBtu

Emission Limit Averaging Period	Cost-effectiveness ($/ton)	Visibility Impact Max Class I Area (dv)	Cumulative Impacts (dv)	No. Class I Areas in Cumulative Impacts	Visibility Improvement Max Class I Area (dv)	Cumulative Visibility Improvement (dv)
30 day roll	$3,125	3.36			0.62	
30 BOD	$1,859				0.19	
30 BOD	$3,450	3.46		9	1.51	6.51
30 BOD	$2,973	3.46		9	1.51	6.51
30 BOD						
30 BOD						
30 BOD	$3,114	4.53	18.30	13	1.34	7.21
30 BOD	$3,472	4.53	18.30	13	1.34	7.21
30 BOD	$3,395	4.53	18.30	13	1.34	7.21
30 BOD						
30 BOD						
30 BOD	$2,405	1.22	6.54	11	0.56	3.07

Notes

Based on 15 yr life. SCR rejected at $5,300/ton (assuming 30 yr life - see final). Improvement to existing DSI (more sorbent) rejected at $3,578/ton and 0.25 dv improvement. Subsequent CD requires Unit 1 to retire by 12/31/22 or install SCR. Planned Unit 2 (not BART must install SCR by 9/30/15 of +24 months after operation.

Later revised (79 FR 56322, 80 FR 19220) to to 0.10 lb/MMbtu based on a determination that the 0.056 lb/Mmbtu limit is unachievable when ST1 is operated in combined cycle with GT1. Cost-effectiveness modified in final, rate finalized at 0.07 lbs/MMBtu averaged across Units 2 and 3. Visibility impacts/benefits are for Both Units 2 and 3.
Cost-effectiveness modified in final, rate finalized at 0.07 lbs/MMBtu averaged across Units 2 and 3. Visibility impacts/benefits are for Both Units 2 and 3.

SIP revision BART alternative for Apache Units 2 and 3. The compliance date is 12/5/17.

SIP revision BART alternative for Apache Units 2 and 3. The compliance date is 12/5/17.

Cost-effectiveness based on 0.05 lbs/MMBtu, finalized at 0.055 lbs/MMBtu averaged across Units 2 and 3 and 4. Costs lowered in final, but based on earlier baseline so not included here. Visibility impacts/benefits are for Units 2 and 3 and 4.

Cost-effectiveness based on 0.05 lbs/MMBtu, finalized at 0.055 lbs/MMBtu averaged across Units 2 and 3 and 4. Costs lowered in final, but based on earlier baseline so not included here. Visibility impacts/benefits are for Units 2 and 3 and 4.

Cost-effectiveness based on 0.05 lbs/MMBtu, finalized at 0.055 lbs/MMBtu averaged across Units 2 and 3 and 4. Costs lowered in final, but based on earlier baseline so not included here. Visibility impacts/benefits are for Units 2 and 3 and 4.

Retirement by 4/1/16
Retirement or switch to gas by 7/31/2025. Interim BART is 0.22 lbs/MMBtu (LNB/SOFA) based on reduced life.
Retirement or switch to gas by 7/31/2025. Interim BART is 0.22 lbs/MMBtu (LNB/SOFA) based on reduced life.
Cost-effectiveness based on 0.05 lbs/MMBtu, finalized at 0.065 lbs/MMBtu averaged across Units 1 and 2. Costs lowered in final, but based on earlier baseline so not included here. Visibility impacts/benefits are for Units 1 and 2. Region working on a BtB alternative for Coronado.

AZ	77 FR 42834, 77 FR 72512	BART	FIP	N		Coronado Unit 2
AZ	79 FR 9318, 79 FR 52420	BART	FIP	Y		Sundt Unit 4
AZ	79 FR 9318, 79 FR 52420	BART	FIP	Y		Sundt Unit 5
AZ	79 FR 9318, 79 FR 52420	BART	FIP	Y		Nelson Lime Kiln 1
AZ	79 FR 9318, 79 FR 52420	BART	FIP	Y		Nelson Lime Kiln 2
AZ	79 FR 9318, 79 FR 52420	BART	FIP	Y	?	Nelson Lime Kiln 1
AZ	79 FR 9318, 79 FR 52420	BART	FIP	Y		Nelson Lime Kiln 2
AZ	79 FR 9318, 79 FR 52420	BART	FIP	Y		Hayden Copper Smelter
AZ	79 FR 9318, 79 FR 52420	BART	FIP	Y		Miami Copper Smelter
AZ	79 FR 9318, 79 FR 52420	RP	FIP	Y		Clarkdale Lime Kiln 4
AZ	79 FR 9318, 79 FR 52420	RP	FIP	Y		Rillito Lime Kiln 4
AR	80 FR 18944, 81 FR 66332	BART	FIP	Y		Flint Creek Unit 1
AR	80 FR 18944, 81 FR 66332	BART	FIP	Y		Flint Creek Unit 1
AR	80 FR 18944, 81 FR 66332	BART	FIP	Y		White Bluff Unit 1
AR	80 FR 18944, 81 FR 66332	BART	FIP	Y		White Bluff Unit 1
AR	80 FR 18944, 81 FR 66332	BART	FIP	Y		White Bluff Unit 2
AR	80 FR 18944, 81 FR 66332	BART	FIP	Y		White Bluff Unit 2
AR	80 FR 18944, 81 FR 66332	BART	FIP	Y		Lake Catherine Unit 4

EGU	coal	412	NOx	SCR+LNB+OFA	0.065 lbs/MMBtu
EGU	coal/gas	130 MW/173	NOx	SNCR	0.36 lbs/MMBtu
EGU	coal/gas	130 MW/173	SO2	DSI	0.23 lbs/MMBtu
Lime Kiln	coal + pet coke		NOx	SNCR	3.80 lb/ton lime
Lime Kiln	coal + pet coke		NOx	SNCR	2.61 lb/ton lime
Lime kiln	coal + pet coke		SO2	lower S fuel	9.32 lbs/ton
Lime kiln	coal + pet coke		SO2	lower S fuel	9.73 lbs/ton
Converters 1, 3-5 and anode furnaces 1, 2			SO2	amine scrubber	98.5% control
Converters 2-5			SO2	Primary capture system upgrades; new secondary capture system	99.7% control
Lime kiln			NOx	SNCR	2.12 lbs/ton; 810 tpy
Lime kiln			NOx	SNCR	3.46 lbs/ton
EGU	coal	558	NOx	LNB + OFA	0.23 lbs/MMBtu
EGU	coal	559	SO2	NID	0.06 lbs/MMBtu
EGU	coal	850	NOx	LNB + SOFA	0.15 lbs/MMBtu
EGU	coal	850	SO2	SDA	0.06 lbs/MMBtu
EGU	coal	850	NOx	LNB + SOFA	0.15 lbs/MMBtu
EGU	coal	850	SO2	SDA	0.06 lbs/MMBtu
EGU	gas	558	NOx	BOOS	0.22 lbs/MMBtu

30 BOD	$1,900	1.22	6.54	11	0.56	3.07
30 BOD	$3,222	3.40	0.23	10	0.23	0.60
30 BOD	$1,857	3.40	6.60	10	0.20	0.80
30 day roll	$817	1.79	3.34	9	0.58	0.85
30 day roll	$807	1.79	3.34	9	0.58	0.85
30 day roll	$856	1.79	3.34	8	0.10	0.29
30 day roll	$819	1.79	3.34	8	0.10	0.29
365 day average	$865	1.44	10.20	12	1.47	10.32
365 day average	$990	2.86 - 3.61	5.1 - 8.2	12	0.41 - 1.06	1.7 - 4.3
30 day roll; annual	$1,142	5.15	7.50	12	1.85	3.00
30 day roll	$1,047	1.26	3.90	12	0.24	0.80
30 BOD	$1,258	0.97	3.22	4	0.08	0.15
30 BOD	$3,845	0.97	3.22	4	0.62	1.84
30 BOD	$350	1.63	4.70	4	0.18	0.48
30 BOD	$2,565	1.63	4.70	4	0.82	2.88
30 BOD	$340	1.70	4.84	4	0.23	0.60
30 BOD	$2,421	1.70	4.84	4	0.94	2.08
30 BOD	$138	1.37	2.72	4	0.60	1.22

Cost-effectiveness for unit 2 based on low load controller SCR upgrade from a CD required SCR installation @ 0.08. Finalized at 0.065 lbs/MMBtu averaged across Units 1 and 2. Costs lowered in final, but based on earlier baseline so not included here. Visibility impacts/benefits are for Units 1 and 2. Region working on a BtB alternative for Coronado.
SCR rejected at $5,176/ton with a max visibility improvement of 0.78 and a cumulative visibility improvement of 1.6 dv.
SDA and wet FGD rejected at $5,091 and $5,505, with max visibility improvements of 0.16 and 0.11 dv, respectively, and cumulative visibility improvements of 0.6 and 0.4 dv, respectively.

Visibility benefits are for Kiln 1 and Kiln 2

Visibility benefits are for Kiln 1 and Kiln 2
DSI rejected at $4,178/ton for Kiln 1 and $4,058/ton for Kiln 2, with max and cumulative visibility improvements of 0.21 and 0.57, respectively. Final limit includes a requirement for SNCR optimization plan.
DSI rejected at $4,178/ton for Kiln 1 and $4,058/ton for Kiln 2, with max and cumulative visibility improvements of 0.21 and 0.57, respectively. Final limit includes a requirement for SNCR optimization plan.

The proposed control was a second acid plant control. The final control was changed to an amine scrubber in response to comments.

Visibility range due to uncertainty on the amount of SO2 controlled.

Final limit includes a requirement for SNCR optimization plan.

Final limit includes a requirement for SNCR optimization plan.
LNB/OFA/SNCR rejected at $3,099/ton with max and cumulative visibility improvements of 0.114 and 0.20 dv, respectively. Cost updated in final.
Wet FGD rejected at $4,919/ton with max and cumulative visibility improvements of 0.629 and 1.881 dv, respectively.
LNB/SOFA + SNCR rejected at $1,758 with max and cumulative visibility improvements of 0.20 and 0.553 dv, respectively.
Wet FGD rejected at $3,336/ton with max and cumulative visibility improvements of 0.834 and 2.921 dv, respectively. Cost updated in final
LNB/SOFA + SNCR rejected at $1,449 with max and cumulative visibility improvements of 0.258 and 0.673 dv, respectively.
Wet FGD rejected at $3,152/ton with max and cumulative visibility improvements of 0.780 and 2.787 dv, respectively. Cost updated in final.
LNB/SOFA rejected at $1,450/ton with max and cumulative visibility improvements of 0.688 and 1.397 dv, respectively.

AR	80 FR 18944, 81 FR 66332	BART	FIP	Y	Domtar Ashdown Mills Power Boiler 2
AR	80 FR 18944, 81 FR 66332	BART	FIP	Y	Domtar Ashdown Mills Power Boiler 2
AR	80 FR 18944, 81 FR 66332	RP	FIP	Y	Independence Unit 1
AR	80 FR 18944, 81 FR 66332	RP	FIP	Y	Independence Unit 1
AR	80 FR 18944, 81 FR 66332	RP	FIP	Y	Independence Unit 2
AR	80 FR 18944, 81 FR 66332	RP	FIP	Y	Independence Unit 2
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	CEMEX-Lyons Kiln
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	CENC Boiler 4
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	CENC Boiler 5
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	Craig Unit 1
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	Craig Unit 2
CO	77 FR 18052, 77 FR 76871, 79 FR 47636	BART	SIP	N	Craig Unit 1
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	Hayden Unit 1
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	Hayden Unit 2
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	Hayden Unit 1
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	Hayden Unit 2
CO	76 FR 18052, 77 FR 76871	BART	SIP	Y	Martin Drake Unit 5
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	Martin Drake Unit 6
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	Martin Drake Unit 7

Paper mill	coal, bark, PPF, TDF, oils, gas, coke		NOx	LNB	345 lbs/hr
Paper mill	coal, bark, PPF, TDF, oils, gas, coke		SO2	Scrubber upgrade	91.5 lbs/hr
EGU	coal	850	NOx	LNB + SOFA	0.15 lbs/MMBtu
EGU	coal	850	SO2	SDA	0.06 lbs/MMBtu
EGU	coal	850	NOx	LNB + SOFA	0.15 lbs/MMBtu
EGU	coal	850	SO2	SDA	0.06 lbs/MMBtu
Lime kiln			NOx	SNCR	255.3 lbs/hr; 901.0 tpy
private EGU	coal/gas/oil	360 MMBtu/hr	NOx	LNB + SOFA	0.37 lba/MMBtu
private EGU	coal/oil	650 MMBtu/hr	NOx	LNB + SOFA + SNCR	0.19 lbs/MMBtu
EGU	coal	428	NOx	SNCR	0.27 lbs/MMBtu
EGU	coal	428	NOx	SNCR	0.27 lbs/MMBtu
EGU	coal	428			
EGU	coal		SO2	Scrubber upgrade	0.13 lbs/MMBtu
EGU	coal		SO2	Scrubber upgrade	0.13 lbs/MMBtu
EGU	coal		NOx	SCR	0.08 lbs/MMBtu
EGU	coal		NOx	SCR	0.07 lbs/MMBtu
EGU	coal	51	SO2	DSI	0.26 lbs/MMBtu
EGU	coal	85	SO2	SDA	0.13 lbs/MMBtu
EGU	coal	142	SO2	SDA	0.13 lbs/MMBtu

30 BOD	$1,951	0.84	1.16	4	0.18	0.21
30 BOD	$1,411	0.84	1.16	4	0.14	0.26
30 BOD	$401	2.03	4.03	2	0.46	0.66
30 BOD	$2,853	2.51	4.78	2	1.18	2.27
30 BOD	$436	2.03	4.03	2	0.46	0.66
30 BOD	$2,634	2.51	4.78	2	1.18	2.27
30 day roll; annual	$2,082				0.39	
30 day roll	$3,234				0.08	
30 day roll	$4,918				0.26	
30 day roll	$4,877				0.31	
30 day roll	$4,712				0.31	
30 day roll	$2,317				0.10	
30 day roll	$3,626				0.21	
30 day roll	$3,385				1.12	
30 day roll	$4,064				0.85	
30 day roll	$1,760				0.12	
30 day roll	$2,808				0.25	
30 day roll	$2,345				0.40	

SNCR at 35% control rejected at $1,909/ton with max and cumulative visibility improvements of 0.212 and 0.248 dv, respectively.

Changed from proposed SO2 limit of 0.11 lbs/MMBtu, but essentially equivalent level of control.
Visibility data for both Unit 1 and 2. NOx rate calculated based on a rolling 30-BOD average, to include only those hours for which the unit was dispatched at 50% or greater of maximum capacity.

Visibility data for both units. Final only listed visibility info for 2 Class I areas whereas proposal listed 4. Wet FGD rejected at $3,706/ton with max and cumulative visibility improvements of 0.526 and 1.942 dv, respectively. Cost updated in final.
Visibility data for both Unit 1 and 2. NOx rate calculated based on a rolling 30-BOD average, to include only those hours for which the unit was dispatched at 50% or greater of maximum capacity.

Visibility data for both units. Final only listed visibility info for 2 Class I areas whereas proposal listed 4. Wet FGD rejected at $3,416/ton with max and cumulative visibility improvements of 0.569 and 2.198 dv, respectively. Cost updated in final.
SNCR @ 45% control. SNCR @ 48.5% at $1,934/ton rejected due to uncertainty that level could be achieved.

LNB + SOFA + SNCR rejected at $3,729 with max visibility improvement of 0.12 dv

SCR rejected at $11,764 with max visibility improvement of 0.31 dv
SIP adopted a plan using SNCR at Unit 1 @ 0.28 lbs/MMBtu and SCR at Unit 2 @ 0.08 lbs/MMBtu. with SCR on Unit 1 by 8/31/2021.
SIP adopted a plan using SNCR at Unit 1 @ 0.28 lbs/MMBtu and SCR at Unit 2 @ 0.08 lbs/MMBtu. .

EPA proposed a settlement (79 FR 47636) in which CO submits SIP with SCR on Unit 1 by 8/31/2021. Not yet finalized.

Upgrades listed as "additional equipment and maintenance" to the existing LSD.

Upgrades listed as "additional equipment and maintenance" to the existing LSD.

SDA rejected at Unit 5 due to space constraints.
SDA at 0.09 lbs/MMBtu rejected at $4,064/ton with a max visibility improvement of 0.26 dv. Cost number seems wrong.

SDA at 0.09 lbs/MMBtu rejected at $2,483/ton with a max visibility improvement of 0.41 dv.

CO	76 FR 18052, 77 FR 76871	BART	SIP	Y	Martin Drake Unit 5
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	Martin Drake Unit 6
CO	77 FR 18052, 77 FR 76871	BART	SIP	Y	Martin Drake Unit 7
CO	77 FR 18052, 77 FR 76871	BART alt	SIP	Y	Various
CO	77 FR 18052, 77 FR 76871	RP	SIP	Y	Rawhide Unit 101
CO	77 FR 18052, 77 FR 76871	RP	SIP	Y	Nixon Unit 1
CO	77 FR 18052, 77 FR 76871	RP	SIP	Y	Nixon Unit 1
CO	77 FR 18052, 77 FR 76871	RP	SIP	Y	Holcim Cement Florence
CO	77 FR 18052, 77 FR 76871	RP	SIP	Y	Craig Unit 3
CO	77 FR 18052, 77 FR 76871	RP	SIP	Y	Various
CT	77 FR 17367, 78 FR 5158, 79 FR 39322	BART alt	SIP	Y	Various
DE	76 FR 27973, 76 FR 42557	BART alt	SIP	Y	Various
FL	77 FR 73369, 78 FR 53250	BART	SIP	Y	Lansing Smith Unit 1
FL	77 FR 73369, 78 FR 53250	BART	SIP	Y	Lansing Smith Unit 1
FL	77 FR 73369, 78 FR 53250	BART	SIP	Y	Crystal River Unit 1
FL	77 FR 73369, 78 FR 53250	BART	SIP	Y	Crystal River Unit 2
FL	77 FR 73369, 78 FR 53250	BART	SIP	Y	Crystal River Unit 1

EGU	coal		51	NOx	ULNB + OFA	0.31 lbs/MMBtu
EGU	coal		85	NOx	ULNB + OFA	0.31 lbs/MMBtu
EGU	coal		142	NOx	ULNB + OFA	0.29 lbs/MMBtu
EGUs						
EGU	coal		305	NOx	ECC	0.145 lbs/MMBtu
EGU	coal		227	SO2	SDA	0.11 lbs/MMBtu
EGU	coal		227	NOx	ULNB + OFA	0.21 lbs/MMBtu
Lime kiln	oal, TDF, pet coke, gas, oils				SNCR	2,73 lbs/ton; 2086.8 tpy
EGU	coal		428	NOx	SNCR	0.28 lbs/MMBtu
RB RICE				NOx	NSCR + ATF controller	80-90% control
EGUs + industrial boiler	gas, oil	Various		NOx, SO2		
EGUs	gas, oil, coal	Various		NOx, SO2		
EGU	coal, oil		150	SO2	DSI	0.74 lbs/MMBtu
EGU	coal, oil		190	SO2	DSI	0.74 lbs/MMBtu
EGU	coal		440.5	NOx	SCR	0.09 lbs/MMBtu
EGU	coal		523.8	NOx	SCR	0.09 lbs/MMBtu
EGU	coal		440.5	SO2	wet FGD	0.15 lbs/MMBtu or 95%

30 day roll	$1,342	0.08
30 day roll	$664	0.19
30 day roll	$616	0.24
30 day roll	$644	0.45
30 day roll	$3,744	0.46
30 day roll	$1,372	0.16
30 day roll; annual	$2,293	0.29
30 day roll		0.32
	$571	
30 day roll	$477	0.48
30 day roll	$435	0.39
30 day roll	$8,244	1.71
30 day roll	$8,244	1.71
30 day roll	$10,000	

ULNB + SCR rejected at $7,133 with a max visibility improvement of 0.12 dv

ULNB + SCR rejected at $5,260 with a max visibility improvement of 0.27 dv

ULNB + SCR rejected at $4,797 with a max visibility improvement of 0.37 dv

CO adopted a BART alternative involving Cherokee 1, 2, 3, 4; Valmont 5; Pawnee 1; and Arapahoe 3, 4. Some were non-BART. Involved retirements, gas conversion, and controls. ECC=enhanced combustion control. SNCR rejected at $3,168 with a max visibility improvement of 0.46 dv.
Represents 78% control. 85% control rejected at $3,392/ton with a max visibility improvement of 0.50 dv.

SNCR rejected at $4,564/ton with a max visibility improvement of 0.16 (same).

SCR not deemed feasible by CO.

SCR rejected at $6,952/ton with a max visibility improvement of 0.79 dv.

CO adopted NSCR + ATF controllers for rich burn RICE greater than 500 hp.
CT adopted a BART alternative involving Middletown Power Units 3, 4; Montville Power Unit 6; Norwalk Power Unit 2; PSEG Bridgeport Unit 3; PSEG New Haven Unit 1; Cascades Boxboard PFI boiler. Relied on state rules controlling NOx and SO2 and adoption of CAIR ozone season trading program.

DE adopted a BART alternative involving NGR Indian River Unit 3, McKee Run Unit 3, and Connectiv Edge Moor Units 4 and 5. Relied on state rule that limits emissions for EGUs > 25 MW. Program included 8 units, which included the 4 BART units.
Wet FGD rejected at $1,862/ton with max visibility improvement of 0.67 dv. Units 1 and 2 retired 3/16.
Wet FGD rejected at $2,009/ton with max visibility improvement of 0.61 dv. Units 1 and 2 retired 3/16.

Visibility improvement assumed to be for both Unit 1 and 2. Cost may be based on shorter life. Units have the option to install controls by 1/1/2018 or retire by 1/31/2020 with an announcement date of 1/1/2015. Company has announced it will retire both Units 1 and 2.

Visibility improvement assumed to be for both Unit 1 and 2. Cost may be based on shorter life. Units have the option to install controls by 1/1/2018 or retire by 1/31/2020 with an announcement date of 1/1/2015. Company has announced it will retire both Units 1 and 2.

Visibility improvement for FGD not listed in FR. Cost may be based on shorter life. Units have the option to install controls by 1/1/2018 or retire by 1/31/2020 with an announcement date of 1/1/2015. Company has announced it will retire both Units 1 and 2.

FL	77 FR 73369, 78 FR 53250	BART	SIP	Y	Crystal River Unit 2
GA	77 FR 11452, 77 FR 38501	RP	SIP	N	Georgia Pacific Brunswick Power Boiler 4
GA	77 FR 11452, 77 FR 38501	RP	SIP	N	Intl Paper Savannah Mill Power Boiler 13
HI	77 FR 31692, 77 FR 61478	RP	FIP	Y	Kanoelehua Hill 5 and 6; Puma Boiler 1; Shipman Boiler S-3 and S-4
ID	76 FR 1579, 76 FR 36329	BART	SIP	Y	TASCO Riley boiler
ID	76 FR 1579, 76 FR 36329	BART	SIP	Y	TASCO Riley boiler
ID	76 FR 1579, 76 FR 36329	BART	SIP	Y	Monsanto #5 Rotary Kiln
IL	77 FR 3966, 77 FR 39943	BART alt	SIP	Y	Various
IN	77 FR 3975, 77FR 34218	BART alt	SIP	Y	Alcoa
KS	76 FR 52604, 76 FR 80754	BART	SIP	Y	Kansas City P&L La Cygne Units 1 &2
KS	76 FR 52604, 76 FR 80754	BART	SIP	Y	Kansas City P&L La Cygne Units 1 &2
KS	76 FR 52604, 76 FR 80754	BART	SIP	Y	Jeffrey Energy Center Unit 1
KS	76 FR 52604, 76 FR 80754	BART	SIP	Y	Jeffrey Energy Center Unit 2

EGU	coal		523.8	SO2	wet FGD	0.15 lbs/MMBtu or 95%
Paper mill	No. 6 fuel oil, wood waste, TDF			SO2	lower S fuel oil	1% S fuel oil + 5M gallon/year limit
Paper mill	coal, oil, wood waste			SO2	Undetermined 2,000 tpy reduction	
EGU	oil			SO2	lower S fuel oil to 1%	3,550 tpy SO2 cap
Industrial boiler	coal			SO2	SDA	104 lbs/hr
Industrial boiler	coal			NOx	LNB/OFA	31 lbs/hr
phosphorus kiln	coal, gas			SO2	wet FGD	143 lbs/hr
boilers and potlines	coke			SO2, NOx	wet FGD, LNB + OFA	
EGU	coal	Unit 1: 734 MW; Unit 2: 682 MW		NOx	Exisating SCR Unit 1, combustion controls Unit 2	0.13lbs/MMBtu
EGU	coal	Unit 1: 734 MW; Unit 2: 682 MW		SO2	Existing wet FGD Unit 2, new scrubber Unit 2	0.10 lbs/MMBtu
EGU	coal		720	NOx	LNB	0.15
EGU	coal		720	NOx	LNB	0.15

30 day roll	$10,000		
	$3,228		
annual	$5,500	4.70	6.19
hour	$2,163		
hour	$1,270		
hour	$466		
30 day roll			
30 day roll			
30 day roll			
30 day roll			

Visibility improvement for FGD not listed in FR. Cost may be based on shorter life. Units have the option to install controls by 1/1/2018 or retire by 1/31/2020 with an announcement date of 1/1/2015. Company has announced it will retire both Units 1 and 2.

GA relied on CAIR/CSAPR. Due to the SC's remand, GA must submit a replacement CSAPR Phase 2 budgets to receive better-than-BART coverage for EGUs.

GA agreed to a 2,000 tpy reduction based on undetermined methodology. No visibility information provided. GA relied on CAIR/CSAPR. Due to the SC's remand, GA must submit a replacement CSAPR Phase 2 budgets to receive better-than-BART coverage for EGUs.

SO2 annual cap on the listed units, all owned by HECO. Cost averaged over the units based on a reduction in fuel oil S to 1%. No visibility improvement data.
Sugar beet processing facility. Visibility iprovement information not provided. TASCO requested an affordability analysis which EPA condicted and concluded the controls were affordable.
Sugar beet processing facility. Visibility iprovement information not provided. TASCO requested an affordability analysis which EPA condicted and concluded the controls were affordable.

Phosphorous production kiln. Visibility iprovement information not provided.
IL adopted a BART alternative (in lieu of CAIR/CSAPR) that covered 22 BART units and 36 non-BAT units. See final for a demo that the alternative BART program was better than BART. Other BART units were not covered by this plan and underwent source-by-source BART analysis w/ no addl controls.
IN adopted an alternative BART for Alco that loosened the SO2 limits at potlines 2-6 and boilers 2 and 3 in exchange for control at boiler 1 (non-BART). For SO2, Boilers 2 and 3 get wet FGD at 90% control and for NOx, they get LNB + OFA. Boiler 1 gets wet FGD at 91% and lnb + OFA. Potlines 2-6 can burn coke at 3.5% S in lieu of 3% S (which would have been BART). Cost and visibility info not supplied.

Unit 1 already had SCR. Unit 2 would add combustion controls. The NOx rate is weighted between the two units. KS provided addl info summarized in the final, but no cost or visibility info. Subsequently, LA Cygne Unit 2 later installed SCR anyway.

Unit 1 already had wet FGD. Unit 2 would add a scrubber. The SO2 rate is weighted between the two units. KS provided addl info summarized in the final, but no cost or visibility info.

SCR rejected at $5,374 with *additional* max and cumulative improvements of 0.048 dv and 0.161 dv, respectively. Subsequent PSD CD requires SCR on one unit and either install a second SCR or meet a plant-wide NOx limit of 0.10 lbs/MMBtu on a 30 day roll.

SCR rejected at $5,367 with *additional* max and cumulative improvements of 0.042 dv and 0.153 dv, respectively. Subsequent PSD CD requires SCR on one unit and either install a second SCR or meet a plant-wide NOx limit of 0.10 lbs/MMBtu on a 30 day roll.

KS	76 FR 52604, 76 FR 80754	BART	SIP	Y	Jeffrey Energy Center Unit 1
KS	76 FR 52604, 76 FR 80754	BART	SIP	Y	Jeffrey Energy Center Unit 2
KS	76 FR 52604, 76 FR 80754	BART	SIP	Y	Gordon Evans Unit 2
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Murray Gill Units 1, 2, 3 and 4
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Neosho Unit 7
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Hutchinson Unit 4
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Jeffrey Energy Center Unit 3
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Lawrence Unit 3
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Lawrence Unit 4
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Lawrence Unit 4
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Lawrence Unit 5
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Lawrence Unit 5
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Tecumseh Unit 7
KS	76 FR 52604, 76 FR 80754	RP	SIP	Y	Tecumseh Unit 8
KY	76 FR 78194, 77 FR 19098	BART	SIP	Y	Mill Creek Units 3
KY	76 FR 78194, 77 FR 19098	BART	SIP	Y	Mill Creek Units 4
KY	76 FR 78194, 77 FR 19098	BART	SIP	Y	Cooper Unit 1
KY	76 FR 78194, 77 FR 19098	BART	SIP	Y	Cooper Unit 2
KY	76 FR 78194, 77 FR 19098	BART	SIP	Y	Spurlock Unit 1

EGU	coal	720	SO2	wet FGD		0.15
EGU	coal	720	SO2	wet FGD		0.15
EGU	oil/gas	384	NOx SO2	switch to gas		
EGU	oil/gas	40, 71, 104, 102		switch to gas		
EGU	oil/gas	67		switch to gas		
EGU	oil/gas	75		switch to gas		
EGU	coal	720	NOx SO2	LNB + scrubber		0.15
EGU	coal	48	NOx	LNB		0.18
EGU	coal	110	NOx	LNB		0.18
EGU	coal	110	SO2	scrubber upgrade		0.15
EGU	coal	373	NOx	LNB		0.15
EGU	coal	373	SO2	scrubber upgrade		0.15
EGU	coal	74	NOx	LNB		0.18
EGU	coal	130	NOx	LNB		0.18
EGU	coal	463	SO3, H2SO4	sorbent injection	64.3 lbs/hr	
EGU	coal	544	SO3, H2SO4	sorbent injection	76.5 lbs/hr	
EGU	coal	116	SO2	PJFF		
EGU	coal	225	SO2	PJFF		
EGU	coal	325	SO2	Wet ESP		

30 day roll		
30 day roll		
30 day roll		
30 day roll		
30 day roll		
30 day roll		
30 day roll		
30 day roll		
30 day roll		
hourly	$4,293	0.85
hourly	$5,017	0.85

KS provided addl cost/visibility data for scrubbers at 0.05 lbs/MMBtu and rejected it due to low addl visibility improvement. Subsequent CD requires scrubbers at 0.07 lbs/MMBtu on a 30 day roll.
KS provided addl cost/visibility data for scrubbers at 0.05 lbs/MMBtu and rejected it due to low addl visibility improvement. Subsequent CD requires scrubbers at 0.07 lbs/MMBtu on a 30 day roll.

1% sulfur fuel oil allowed for emergency backup.

KS RP/LTS. No cost or visibility information provided.

KS RP/LTS. No cost or visibility information provided.

KS RP/LTS. No cost or visibility information provided.
KS RP/LTS. Emission rate is for both NOx and SO2. No cost or visibility information provided. Subsequent CD requires scrubbers at 0.07 lbs/MMBtu on a 30 day roll.

KS RP/LTS. Unit 3 retired 2015

KS RP/LTS. No cost or visibility information provided.

KS RP/LTS. No cost or visibility information provided.

KS RP/LTS. No cost or visibility information provided.

KS RP/LTS. No cost or visibility information provided.

KS RP/LTS. No cost or visibility information provided.

Unit 8 retired in 2015.

Sorbent injection to control SO3 and H2SO4 for PM. Cost values given were a range of "$4,293 to $5,017 per ton of PM reduced." This is assumed her to represent the range of Unit 3 to Unit 4. Visibility improvement is cumulative for both Units 3 and 4.

Sorbent injection to control SO3 and H2SO4 for PM. Cost values given were a range of "$4,293 to $5,017 per ton of PM reduced." This is assumed her to represent the range of Unit 3 to Unit 4. Visibility improvement is cumulative for both Units 3 and 4.

KY participates in CAIR for EGU BART SO2 and NOx. CDS + PJFF already required by a CD. PJFF used to satisfy PM BART. No emission limits, cost or visibility info provided.

KY participates in CAIR for EGU BART SO2 and NOx. CDS + PJFF already required by a CD. PJFF used to satisfy PM BART. No emission limits, cost or visibility info provided.
KY participates in CAIR for EGU BART SO2 and NOx. Wet FGD and wet ESP already required by a CD. Wet ESP used to satisfy PM BART. No emission limits, cost or visibility info provided.

KY	76 FR 78194, 77 FR 19098	BART	SIP	Y	Spurlock Unit 2
ME	76 FR 73956, 77 FR 24385	BART	SIP	Y	Wyman Unit 3
ME	76 FR 73956, 77 FR 24385	BART	SIP	Y	Verso Androscoggin Power Boiler 1
ME	76 FR 73956, 77 FR 24385	BART	SIP	Y	Verso Androscoggin Power Boiler 2
ME	76 FR 73956, 77 FR 24385	RP	SIP	Y	Various
MD	77 FR 11827, 77 FR 39938	BART alt	SIP	Y	Various
MD	77 FR 11827, 77 FR 39938	BART	SIP	Y	Holcim Independent/St. Lawrence
MD	77 FR 11827, 77 FR 39938	BART	SIP	Y	New Page/Westvaco/Luke Paper Unit 25
MA	77 FR 30932, 78 FR 57487	BART	SIP	Y	Wheelabrator-Sangus boilers 1 and 2
MA	77 FR 30932, 78 FR 57487	BART alt	SIP	Y	Various
MA	77 FR 30932, 78 FR 57487	RP	SIP	Y	Various
MI	77 FR 46912, 77 FR 71533	BART	FIP	Y	St. Mary's Cement-Charlevoix
MI	77 FR 46912, 77 FR 71533	BART	FIP	Y	Escanaba Paper Boiler 8
MN, MI	77 FR 49308, 78 FR 8706	BART	FIP	Y	U.S. Steel, Minntac indurating furnacesLines 3-7
MN, MI	77 FR 49308, 78 FR 8706	BART	FIP	Y	Northshore Mining Company Furnaces 11, 12
MN, MI	77 FR 49308, 78 FR 8706	BART	FIP	Y	Northshore Mining Company Process Boilers 1 and 2

EGU		coal		510 SO2	Wet ESP	
EGU		oil		115 SO2	lower S fuel oil	
	pulp mill	oil			lower S fuel oil	
	pulp mill	oil			lower S fuel oil	
various		oil	various	SO2	lower S fuel oil	
EGUs		various		SO2, NOx		
dry kiln				NOx	SNCR	
pulp mill				SO2	SDA or CDS	0.44 lbs/MMBtu
municipal waste incinerator				NOx	SNCR upgrade	185 ppm
EGUs		coal, oil		SO2, NOx		
various		oil		SO2	lower S fuel oil	
kiln				NOx	SNCR	2.8 lb/ton clinker; 2.4 lb/ton clinker
pulp mill		oil and gas		NOx	LNB	0.35lbs/MMBtu
iron production indurating furnace		coal, gas		NOx	LNB	1.2 lbs/MMBtu for gas; 1.5 lbs/MMBtu other fuels
iron production indurating furnace		coal, gas		NOx	LNB	1.2 lbs/MMBtu for gas; 1.5 lbs/MMBtu other fuels
iron production indurating furnace		oil, gas		NOx	LNB	0.085 lbs/MMBtu

			3		0.44
	$631	0.90			
	$631	0.90			
30 day roll					
30 day roll					
30 day roll; annual	$920-$980	0.40			
30 day roll	$1,500	0.40			
30 day roll	$500		3	3.30	7.10
30 day roll	$500		3	0.60	1.30
30 day roll	$723		3	0.60	1.30

KY participates in CAIR for EGU BART SO2 and NOx. Wet FGD and wet ESP already required by a CD. Wet ESP used to satisfy PM BART. No emission limits, cost or visibility info provided.
Reduction in fuel oil S from 2% to 0.7%. No cost information, or max viaibility improvement provided.

Reduction in fuel oil S from 1.8% to 0.7%. Visibility improvement of 0.9 dv not specified as to max or cumulative. Assumed to be max and to represent both Boiler 1 and 2.

Reduction in fuel oil S from 1.8% to 0.7%. Visibility improvement of 0.9 dv not specified as to max or cumulative. Assumed to be max and to represent both Boiler 1 and 2.
MANE-VU "ask" includes a low S fuel oil strategy of phasing in fuel oil S reductions in distillate and residual fuel oils. Maine codified this strategy.

Maryland's BART alternative program used its Healthy Air Act, which covered 15 EGUs, 7 of which were subject to BART. Maryland demonstrated that 13 of the units (not all 15 were in the BtB program) reduced their SO2 and NOx more than presumptive BART.

No cost or visibility information provided

No cost or visibility information provided. SO2 emission rate clarified in final.

Muni waste incenerator. Reduction from 205 to 185 ppm using existing SNCR.

MA's alternative BART used state rules controlling EGUs. MA adopted the more stringent MANE-VU emission limits in lieu of BART presumptive limits to establish the BART benchmark. Alternative program consisted of 15 EGUs, 10 of which were BART-eligible.
It appears that MA has complied with some aspects of the MANE-VU "ask," including adopting state rules for lower sulfur fuel oil for most districts.
NOx limit modified in final. Visibility improvement estimated and unspecified but assumed to be at max Class I Area.
NOx limit modified in final. Visibility improvement estimated and unspecified but assumed to be at max Class I Area. NOx limit finalized also for Boiler 9, but no new controls so not listed here.

Cost conservatively estimated based on tests at a number of facilities. Visibility information includes SO2 control and is for entire facility.

Cost conservatively estimated based on tests at a number of facilities. Visibility information includes SO2 control and is for entire facility.

Cost conservatively estimated based on tests at a number of facilities. Visibility information includes SO2 control and is for entire facility.

MN, MI	77 FR 49308, 78 FR 8706	BART	FIP	Y	United Taconite Line 1 and Line 2 pellet furnaces
MN, MI	77 FR 49308, 78 FR 8706	BART	FIP	Y	United Taconite Line 1 and Line 2 pellet furnaces
MN, MI	77 FR 49308, 78 FR 8706	BART	FIP	Y	ArcelorMittal Steel indurating furnace
MN, MI	77 FR 49308, 78 FR 8706	BART	FIP	Y	Hibbing Taconite Line 1 pelletizing furnace
MN, MI	77 FR 49308, 78 FR 8706	BART	FIP	Y	U.S. Steel, Keetac Grate Kiln pelletizing furnace
MN, MI	77 FR 49308, 78 FR 8706	BART	FIP	Y	Tilden Mining Line 1
MO	77 FR 11958, 77 FR 38007	BART	SIP	Y	Holcim-Clarksville Kiln EP14
MO	77 FR 11958, 77 FR 38007	BART	SIP	Y	Holcim-Clarksville Kiln EP14
MT	77 FR 23988, 77 FR 57864, 77 FR 29270, 82 FR 17948	BART	FIP	Y	Ash Grove Cement
MT	77 FR 23988, 77 FR 57864, 77 FR 29270, 82 FR 17948	BART	FIP	N	Holcim Trident Cement
MT	77 FR 23988, 77 FR 57864, 77 FR 29270, 82 FR 17948	BART	FIP	Y	Colstrip Unit 1
MT	77 FR 23988, 77 FR 57864, 77 FR 29270, 82 FR 17948	BART	FIP	Y	Colstrip Unit 1
MT	77 FR 23988, 77 FR 57864, 77 FR 29270, 82 FR 17948	BART	FIP	Y	Colstrip Unit 2

iron production indurating furnace	coal, gas		NOx	LNB	1.2 lbs/MMBtu for gas; 1.5 lbs/MMBtu other fuels	
iron production indurating furnace	coal, gas		SO2	dry scrubbers	529.0 lbs SO2/hr, coal 060% or less	
iron production indurating furnace	coal, gas		NOx	LNB	1.2 lbs/MMBtu for gas; 1.5 lbs/MMBtu other fuels	
iron production indurating furnace	coal, gas		NOx	LNB	1.2 lbs/MMBtu for gas; 1.5 lbs/MMBtu other fuels	
iron production indurating furnace	coal, gas		NOx	LNB	1.2 lbs/MMBtu for gas; 1.5 lbs/MMBtu other fuels	
iron production indurating furnace	coal, gas		NOx	LNB	1.2 lbs/MMBtu for gas; 1.5 lbs/MMBtu other fuels	
cement kiln	coke		NOx	mid-kiln firing of tires		
cement kiln	coke		SO2	switch to 3% sulfur coal		
cement kiln	coal, coke		NOx	LNB + SNCR	8.0 lbs/ton clinker	
cement kiln	coal, coke		NOx	SNCR	7.6 lbs/ton clinker	
EGU	coal	333	NOx	SOFA + SNCR		0.15
EGU	coal	333	SO2	scrubber upgrade		0.08
EGU	coal	333	NOx	SOFA + SNCR		0.15

30 day roll	$500			3	1.90	4.05
30 day roll	$2,000 - $3,000			3	1.90	4.05
30 day roll	$500			3	1.70	3.70
30 day roll	$500			3	3.20	7.00
30 day roll	$500			3	1.80	4.00
30 day roll	$500	0.67		1	0.50	
	$464			3	0.09	
	$1,148			3	0.14 to 0.31	
30 day roll	$2,058	2.52	3.60	12	1.25	2.77
30 day roll	$1,170	1.02	3.53	12	0.30	
30 day roll	$1,564	0.92	2.92	5	0.26	0.74
30 day roll	$912	0.92	2.92	5	0.35	1.04
30 day roll	$1,571	0.90	2.88	5	0.27	0.78

Cost conservatively estimated based on tests at a number of facilities. Visibility information includes SO2 control and is for entire facility.

Cost conservatively estimated based on tests at a number of facilities. Visibility information includes SO2 control and is for entire facility.

Cost conservatively estimated based on tests at a number of facilities. Visibility information includes SO2 control and is for entire facility.

Cost conservatively estimated based on tests at a number of facilities. Visibility information includes SO2 control and is for entire facility.

Cost conservatively estimated based on tests at a number of facilities. Visibility information includes SO2 control and is for entire facility.

Cost conservatively estimated based on tests at a number of facilities. Visibility information for Tilden based only on one ClassI area and includes SO2 control and is for entire facility. Tilde agreed to switch line 1 to gas and that was incorporated into the final.

SNCR at $2,200/ton was rejected as it was projected to provide approx. the same NOx reduction as the mid-kiln firing of tires. Additional visibility data not provided. In final, facility requested termination of its permit, so BART analysis moot.
95% control from wet lime scrubbing at $2,428/ton with visibility improvements between 0.4-0.53 dv at 3 Class I areas (based on a lower 87.5% control) rejected. In final, facility requested termination of its permit, so BART analysis moot.

Proposal based on LNB + SNCR; final changed to SNCR-only, so visibility improvement reflects that. No cumulative visibility info provided. Although 6.5 lbs/ton clinker was finalized, EPA proposed a change (82 FR 17948) to 7.6 lb/ton clinker.

SOFA + SCR rejected at $3,195 with max and cumulative visibility improvements of 0.404 and 1.165, respectively.

Scrubber upgrade is lime injection + addl scrubber vessel.

SOFA + SCR rejected at $3,235 with max and cumulative visibility improvements of 0.423 and 1.248, respectively.

MT	77 FR 23988, 77 FR 57864, 77 FR 29270, 82 FR 17948	BART	FIP	Y	Colstrip Unit 2
MT	77 FR 23988, 77 FR 57864, 77 FR 29270, 82 FR 17948	RP	FIP	N	Devon Energy, Blaine County #1 Compressor Station, Engine #1
MT	77 FR 23988, 77 FR 57864, 77 FR 29270, 82 FR 17948	RP	FIP	N	Devon Energy, Blaine County #1 Compressor Station, Engine #2
NE	77 FR 12770, 77 FR 40150	BART	SIP	Y	Nebraska City Station Unit 1
NE	77 FR 12770, 77 FR 40150	BART	SIP	Y	Gerald Gentleman Unit 1
NE	77 FR 12770, 77 FR 40150	BART	SIP	Y	Gerald Gentleman Unit 2
NE	Unpublished signed proposal	RP	SIP	Y	Gerald Gentleman Unit 1
NE	Unpublished signed proposal	RP	SIP	N	Gerald Gentleman Unit 2
NV	76 FR 36450, 77 FR 17334	BART	SIP	Y	Tracy Generating Station Unit 1
NV	76 FR 36450, 77 FR 17334	BART	SIP	Y	Tracy Generating Station Unit 2
NV	76 FR 36450, 77 FR 17334	BART	SIP	Y	Tracy Generating Station Unit 3
NV	76 FR 36450, 77 FR 17334	BART	SIP	Y	Churchill Generating Station Unit 1
NV	76 FR 36450, 77 FR 17334	BART	SIP	Y	Churchill Generating Station Unit 2
NV	76 FR 36450, 77 FR 17334	BART	FIP	Y	Reid Gardner Unit 1
NV	76 FR 36450, 77 FR 17334	BART	FIP	Y	Reid Gardner Unit 2

EGU	coal	333	SO2	scrubber upgrade		0.08
Compressor engine	gas		NOx	NSCR	21.8 lbs/hr	
Compressor engine	gas		NOx	NSCR	21.8 lbs/hr	
EGU	coal	646	NOx	LNB/OFA	0.23 lbs/MMBtu	
EGU	coal	681	NOx	LNB/OFA	0.23 lbs/MMBtu	
EGU	coal	681	NOx	LNB/OFA	0.23 lbs/MMBtu	
EGU	coal	681	SO2	SDA	0.06 lbs/MMBtu	
EGU	coal	681	SO2	SDA	0.06 lbs/MMBtu	
EGU	gas + oil	55	NOx	LNB + FGR	0.15 lbs/MMBtu	
EGU	gas + oil	83	NOx	LNB + FGR	0.12 lbs/MMBtu	
EGU	gas + oil	113	NOx	LNB + FGR + SNCR	0.19 lbs/MMBtu	
EGU	gas + oil	113	NOx	LNB + FGR	0.20 lbs/MMBtu	
EGU	gas + oil	113	NOx	LNB + FGR	0.16 lbs/MMBtu	
EGU	coal	100	NOx	LNB + OFA + SNCR	0.20 lbs/MMBtu avg. for all three units	
EGU	coal	100	NOx	LNB + OFA + SNCR	0.20 lbs/MMBtu avg. for all three units	

30 day roll	$991	0.90	2.88	5	0.28	0.83
30 day roll	$282					
30 day roll	$282					
30 day roll	$166	0.65	1.11	2	0.22	0.34
30 day roll	$198		8.86	6	0.66	1.94
30 day roll	$198		8.86	6	0.66	1.94
30 BOD	$2,443					
30 BOD	$2,350					
12 month roll	$2,383 to $3,050/ton					
12 month roll	$2,383 to $3,050/ton					
12 month roll	$2,383 to $3,050/ton					
12 month roll						
12 month roll						
30 BOD	$1,222				0.52	
30 BOD	$1,106				0.56	

Scrubber upgrade is lime injection + addl scrubber vessel.

Visibility info not reported, but Q/d info considered. Based on updated Q/d information EPA proposed (82 FR 17948) to not require these controls. Not yet finalized as of 5/1/17

Visibility info not reported, but Q/d info considered. Based on updated Q/d information EPA proposed (82 FR 17948) to not require these controls. Not yet finalized as of 5/1/17

SCR rejected at $2,611/ton with max visibility improvement of 0.39.

Visibility and cost info reported for both units. No max impact reported. SCR rejected at $2,297 with a max and cumulative improvements of 1.15 and 3.21 dv, respectively.

Visibility and cost info reported for both units. No max impact reported. SCR rejected at $2,297 with a max and cumulative improvements of 1.15 and 3.21 dv, respectively.

Based on an unpublished signed proposal that is currently on hold by the new admininstration. Visibility only generally considered.

Based on an unpublished signed proposal that is currently on hold by the new admininstration. Visibility only generally considered.

No visibility data provided. Cost range covers controls over all 3 units.

No visibility data provided. Cost range covers controls over all 3 units.

No visibility data provided. Cost range covers controls over all 3 units.

No cost or visibility data provided.

No cost or visibility data provided.
FIP is due to different NOx limit averaging for Units 1-2 and different NOx limit for Unit 3. Facility is below 750 MW and does not have to follow BART Guidelines. No additional visibility information provided. LNB + OFA + SCR rejected at $2,110/ton (EPA revised) with a max visibility improvement of 0.698 dv.
FIP is due to different NOx limit averaging for Units 1-2 and different NOx limit for Unit 3. Facility is below 750 MW and does not have to follow BART Guidelines. No additional visibility information provided. LNB + OFA + SCR rejected at $1,967/ton (EPA revised) with a max visibility improvement of 0.735 dv.

NV	76 FR 36450, 77 FR 17334	BART	FIP	Y	Reid Gardner Unit 3
Navajo	71 FR 53631, 72 FR 25698	BART	TIP	Y	Four Corners Power Plant Units 1-5
Navajo	75 FR 64221, 76 FR 10530, 77 FR 51620, 81 FR 86988	BART	TIP	N	Four Corners Power Plant Units 4-5
Navajo	78 FR 8274, 78 FR 62509, 79 FR 46514	BART	TIP	Y	Navajo Generating Station
NH	77 FR 11809, 77 FR 50602	BART	SIP	Y	Public Service NH Newington Unit NT1
NM	76 FR 491, 76 FR 52388	BART	FIP	N	San Juan Generating Station Unit 1
NM	76 FR 491, 76 FR 52388	BART	FIP	N	San Juan Generating Station Unit 2
NM	76 FR 491, 76 FR 52388	BART	FIP	N	San Juan Generating Station Unit 3
NM	76 FR 491, 76 FR 52388	BART	FIP	N	San Juan Generating Station Unit 4
NM	79 FR 26909, 79 FR 60985, 79 FR 60978	BART	SIP	Y	San Juan Generating Station Units 1-4
NY	77 FR 24794, 77 FR 51915	BART	FIP	Y	Dynegy Roseton Unit 2
NY	77 FR 24794, 77 FR 51915	BART	FIP	Y	Dynegy Roseton Unit 1

EGU	coal	100	NOx	LNB + OFA + SNCR	0.20 lbs/MMBtu avg. for all three units
EGU	coal	2,040 total for 5 units	SO2	Scrubber upgrade	88% control
EGU	coal	1,540 total for 2 units (Units 1-3 retired)	NOx	SCR + retirements	0.098 lbs/MMBtu
EGU	coal	2,250 for 3 units	NOx	SCR + LNB/SOFA + retirements	see notes
EGU	oil + gas	400	SO2	lower S fuel oil	0.5 lbs/MMBtu
EGU	coal	350	NOx	SCR	0.05 lbs/MMBtu
EGU	coal	360	NOx	SCR	0.05 lbs/MMBtu
EGU	coal	544	NOx	SCR	0.05 lbs/MMBtu
EGU	coal	544	NOx	SCR	0.05 lbs/MMBtu
EGU	coal	Units 3: 544. Unit 4: 544	NOx	Units 1, 2: retirement, Units 3-4: SNCR	Retirement of Units 1, 2 by 12/31/17, SNCR at 0.23 lbs/MMBtu for Units 3, 4
EGU	oil, gas	600	SO2	lower S fuel oil	0.55 lbs/MMBtu
EGU	oil, gas	600	SO2	lower S fuel oil	0.55 lbs/MMBtu

30 BOD	$1,596				0.49	
365 day roll						
30 day roll	Unit 1: $2,515, Unit 2: $3,163, Unit 3: $2,678, Unit 4: $2,622, Unit 5: $2,908	5.95	42.94	16	2.81	23.34
	$2,605 avg. for all 3 units	8.40	48.00	11	5.40	35.00
	$528 - $1,583				0.62	1.21
30 BOD	$2,472	5.15	33.18	16	3.11	21.69
30 BOD	$2,652	5.15	33.18	16	3.11	21.69
30 BOD	$2,087	5.15	33.18	16	3.11	21.69
30 BOD	$1,987	5.15	33.18	16	3.11	21.69
30 day roll	Unit 3: $5,480, Unit 4: $55,587					
24 hour	$3,324	1.0+	4.0+	7	1.42	3.96
24 hour	$3,324	1.0+	4.0+	7	1.37	4.01

FIP is due to different NOx limit averaging for Units 1-2 and different NOx limit for Unit 3. Facility is below 750 MW and does not have to follow BART Guidelines. No additional visibility information provided. LNB + OFA + SCR rejected at $2,183/ton (EPA revised) with a max visibility improvement of 0.652 dv.

Scrubber upgrade from 72% to 88% control for all 5 units. Cost and visibility data not provided. SO2 limit based on plant-wide calculated SO2 reduction. Later modified via CD to 95% control on a 30 day roll for Units 4, 5 (Units 1-3 retired), which required elimination of bypass and conversions to wet stack. Incorporated into TIP via proposed 81 FR 86988.

Given a choice to either operate SCRs on all 5 units or alternate plan to retire Units 1-3 and operate SCRs on Units 4-5. Company picked the alternative. Later modified via CD to 0.080 lbs/MMBtu on a 30 day roll for Units 4, 5 (Units 1-3 retired). Incorporated into TIP as BART via proposed 81 FR 86988. Cost and visibility info based on original assessment of 5 SCRs with a plant-wide average of 0.11 lbs/MMBtu.

NGS has three options that consist of retiring one unit by 12/31/2019 (or a reduction in generation of 561 MW) plus the installation of SCRs on the other two units by 12/31/2030 to achieve NOx emission limits of 0.07 lbs/MMBtu on a 30 day roll. Cost and visibility info based on SCR on all three units at 0.055 lbs/MMBtu.

Reduction from 2.0% to 0.5% S in fuel oil. SO2 emission rate averaging period and addl. Visibility data not provided.

Cost updated in final. Visibility data based on all 4 units. BART modified by subsequent SIP approval and FIP withdrawal.

Cost updated in final. Visibility data based on all 4 units. BART modified by subsequent SIP approval and FIP withdrawal.

Cost updated in final. Visibility data based on all 4 units. BART modified by subsequent SIP approval and FIP withdrawal.

Cost updated in final. Visibility data based on all 4 units. BART modified by subsequent SIP approval and FIP withdrawal.

NM SIP submitted a SIP consisting of retirement of Units 1, 2 + SNCR on Units 3, 4, as an alternative to EPA's FIP. Costs here based on SNCR at Units 3, 4. Considering retirements of Units 1, 2, overall cost effectiveness calculated at $1,049/ton. Visibility improvements of the two retirements + two SNCRs comparable to the FIP - some Class I areas higher and some lower.

Assume the SO2 limit is on an a per unit basis. Corresponds to reducing the fuel oil S content from 1.3% to 0.5%.

Assume the SO2 limit is on an a per unit basis. Corresponds to reducing the fuel oil S content from 1.3% to 0.5%.

NY	77 FR 24794, 77 FR 51915	BART	SIP	Y	Dynergy Danskammer Unit 4
NY	77 FR 24794, 77 FR 51915	BART	FIP	Y	Dynergy Danskammer Unit 4
NY	77 FR 24794, 77 FR 51915	BART	SIP	Y	Lehigh Northeast Cement Company Kiln
NC	81 FR 19519, 81 FR 32652	BART alt	SIP	Y	Various
ND	76 FR 58570, 77 FR 20894	BART	SIP	Y	Coal Creek Station Unit 1
ND	76 FR 58570, 77 FR 20894	BART	FIP	Y	Coal Creek Station Unit 1
ND	76 FR 58570, 77 FR 20894	BART	SIP	Y	Coal Creek Station Unit 2
ND	76 FR 58570, 77 FR 20894	BART	FIP	Y	Coal Creek Station Unit 2
ND	76 FR 58570, 77 FR 20894	BART	SIP	Y	Stanton Station Unit 1
ND	76 FR 58570, 77 FR 20894	BART	SIP	Y	Stanton Station Unit 1
ND	76 FR 58570, 77 FR 20894	BART	SIP	Y	Milton R Young Unit 1
ND	76 FR 58570, 77 FR 20894	BART	SIP	Y	Milton R Young Unit 2

EGU	coal, oil, gas		235	NOx	optimization of existing LNB, co-firing with gas, installation of unspecified post-combustion controls		0.12
EGU	coal, oil, gas		235	SO2	SDA	0.09 lbs/MMBtu	
lime kiln	coal, gas				SNCR	2.88 lbs/clinker	
EGUs	various	various		NOx, SO2	emission caps		
EGU	coal		550	SO2	scrubber upgrade + coal dryer	0.15 lbs/MMBtu	
EGU	coal		550	NOx	SNCR + SOFA + LNB	0.13 lbs/MMBtu averaged with Unit 2	
EGU	coal		550	SO2	scrubber upgrade + coal dryer	0.15 lbs/MMBtu	
EGU	coal		550	NOx	SNCR + SOFA + LNB	0.13 lbs/MMBtu averaged with Unit 2	
EGU	coal		188	SO2	SDA	0.24 lbs/MMBtu (lignite), 0.16 lbs/MMBtu PRB	
EGU	coal		188	NOx	OFA + SNCR	0.29 lbs/MMBtu (lignite), 0.23 lbs/MMBtu (PRB)	
EGU	coal		277	SO2	wet FGD	0.10 lbs/MMBtu	
EGU	coal		517	SO2	wet scrubber upgrade	95% control or 0.15 lbs/MMBtu	

24 hour avg. during O3 season, 30 day roll other times	$6,088	7	0.57
24 hour avg.	$1,840	7	2.17
	$1,145		
30 day roll	$555	1.42	
30 day roll	$2,500	1.51	
30 day roll	$555	1.42	
30 day roll	$2,500	1.51	
30 day roll	$1,330 (lignite), $2,006 (PRB)	1.01	
30 day roll	$3,052 (lignite), $3,778 (PRB)	1.11	
30 day roll	$1,105	2.08	
30 day roll	$522	1.63	

NOx controls were not exactly specified. SCR more cost-effective at $3,151/ton with slightly better visibility improvement, so unclear why it was not selected. Suspect the Unit was going to comply with whatever would get it to 0.12 lbs/MMBtu anyway. Cumulative visibility info double-checked.
EPA approved the NOx BART as a SIP approval but imposed a SO2 FIP. SO2 emission rate is specified on a 24-hour average.

NOx averaging period not specified. Visibility information not provided.

NC was subject to CAIR and CSAPR. NC enacted the Clean Smokestacks Act to reduce NOx and SO2 via caps on 42 coal fired EGUs. NC used this as a BART alternative. 22 EGUs retired, rest have FGD and either SCR or SNCR to meet the emission caps. NC demonstrated that its CSA resulted in much greater NOx and SO2 reductions than presumptive BART.

Wet FGD upgrade with the addition of a coal dryer (DryFining). Visibility info includes ND's NOx BART determination of LNB and is for both Units 1 and 2. EPA rejected ND's NOx BART and promulgated a FIP. No additional visibility information provided. Wet FGD replacement rejected at $1,482/ton with similar visibility improvement.

Visibility information includes wet FGD upgrade + coal dryer and is for both Units 1 and 2. SCR rejected at $4,116/ton with additional visibility improvement of 0.25 - 0.35 dv at max Class I area. NOx limit changed from proposed 0.12 to 0.13 lbs/MMBtu in final.

Wet FGD upgrade with the addition of a coal dryer (DryFining). Visibility info includes ND's NOx BART determination of LNB and is for both Units 1 and 2. EPA rejected ND's NOx BART and promulgated a FIP. No additional visibility information provided. Wet FGD replacement rejected at $1,482/ton with similar visibility improvement.

Visibility information includes wet FGD upgrade + coal dryer and is for both Units 1 and 2. SCR rejected at $4,116/ton with additional visibility improvement of 0.25 - 0.35 dv at max Class I area. NOx limit changed from proposed 0.12 to 0.13 lbs/MMBtu in final.

Unit burns either lignite or PRB but does not blend, so cost figured separately for both. Visibility info for PRB not calculated but estimated to be somewhat less. Visibility information does not include NOx BART SNCR + OFA.

Unit burns either lignite or PRB but does not blend, so cost figured separately for both. Visibility info for PRB not calculated but estimated to be somewhat less. Visibility information includes SDA control.

Visibility information reflects addition of SO2 control only.

Visibility information reflects addition of SO2 control only.

ND	76 FR 58570, 77 FR 20894, 78 FR 16452, 80 FR 8550	BART	SIP	Y	Milton R Young Unit 1
ND	76 FR 58570, 77 FR 20894, 78 FR 16452, 80 FR 8550	BART	SIP	Y	Milton R Young Unit 1
ND	76 FR 58570, 77 FR 20894	BART	SIP	Y	LeLand Olds Unit 1
ND	76 FR 58570, 77 FR 20894	BART	SIP	Y	LeLand Olds Unit 1
ND	76 FR 58570, 77 FR 20894	BART	SIP	Y	LeLand Olds Unit 2
ND	76 FR 58570, 77 FR 20894, 78 FR 16452, 80 FR 8550	BART	SIP	Y	LeLand Olds Unit 2
ND	76 FR 58570, 77 FR 20894	RP	FIP	Y	Antelope Valley Unit 1
ND	76 FR 58570, 77 FR 20894	RP	FIP	Y	Antelope Valley Unit 2
OH	77 FR 3712, 77 FR 39177, 80 FR 76403, 81 FR 11445	BART alt	SIP	Y	P H Glatfelter Boilers 7 and 8
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	OG&E Seminole Unit 1
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	OG&E Seminole Unit 2
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	OG&E Seminole Unit 3
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	OG&E Sooner Unit 1
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	OG&E Sooner Unit 2
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	OG&E Muskogee Unit 4
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	OG&E Muskogee Unit 5

EGU	coal	277	NOx	SNCR + ASOFA	0.36 lbs/MMBtu, startup limit of 2,070.2 lb/hr
EGU	coal	517	NOx	SNCR + ASOFA	0.35 lbs/MMBtu, startup limit of 3,995.6.2 lb/hr
EGU	coal	216	SO2	wet FGD	95% control or 0.15 lbs/MMBtu
EGU	coal	216	NOx	SNCR + SOFA	0.19 lbs/MMBtu
EGU	coal	440	SO2	wet FGD	95% control or 0.15 lbs/MMBtu
EGU	coal	440	NOx	SNCR + ASOFA	0.35 lbs/MMBtu
EGU	coal	435	NOx	LNB + SOFA	0.17 lbs/MMBtu
EGU	coal	435	NOx	LNB + SOFA	0.17 lbs/MMBtu
paper mill	coal				24,930 lbs SO2 for both boilers 7 and 8
EGU	gas	567	NOx	LND + OFA + FGR	0.203 lbs/MMBtu
EGU	gas	567	NOx	LND + OFA + FGR	0.212 lbs/MMBtu
EGU	gas + oil	567	NOx	LND + OFA + FGR	0.164 lbs/MMBtu
EGU	coal	570	NOx	LNB + OFA	0.15 lbs/MMBtu
EGU	coal	570	NOx	LNB + OFA	0.15 lbs/MMBtu
EGU	coal	572	NOx	LNB + OFA	0.15 lbs/MMBtu
EGU	coal	572	NOx	LNB + OFA	0.15 lbs/MMBtu

30 day roll, 24 hr roll	$1,424		2.92	
30 day roll, 24 hr roll	$1,268		3.38	
30 day roll	$586		1.91	
30 day roll	$1,246		0.16	
30 day roll	$463		3.48	
30 day roll	$1,659		3.87	
30 day roll	$586		0.75	
30 day roll	$661		0.75	
24 hr				
30 day roll	$1,554–$2,120	4	0.37	0.88
30 day roll	$1,554–$2,120	4	0.37	0.88
30 day roll	$1,554–$2,120	4	0.37	0.88
30 day roll	$493-$785	4	0.83	1.80
30 day roll	$493-$785	4	0.83	1.80
30 day roll	$260-$281	4	0.77	2.09
30 day roll	$260-$281	4	0.77	2.09

Visibility information includes the BART SO2 control. EPA originally proposed a FIP for SCR. After a BACT court case affirming SNCR due to unproven SCR on ND lignite, EPA finalized SNCR as BART. EPA subsequently proposed and finalized a reconsideration affirming SNCR.

Visibility information includes the BART SO2 control. EPA originally proposed a FIP for SCR. After a BACT court case affirming SNCR due to unproven SCR on ND lignite, EPA finalized SNCR as BART. EPA subsequently proposed and finalized a reconsideration affirming SNCR. Cost-effectiveness number $586 double checked. Possibly explained by the large 32,949 tons of SO2 reduced. Visibility information includes NOx presumptive level of control, which is very close to the pre-controlled limit.
Visibility information estimated as both units 1 and 2 modeled together. EPA originally proposed a FIP for SCR. After a BACT court case affirming SNCR due to unproven SCR on ND lignite, EPA finalized SNCR as BART. EPA subsequently proposed and finalized a reconsideration affirming SNCR.
As with unit 1, cost-effectiveness double checked and appears to be driven by the large 64,465 tons SO2 reduced.

Visibility information estimated as both units 1 and 2 modeled together. No 24 hour startup NOx emission limit specified. Visibility information includes BART SO2 control.After a BACT court case affirming SNCR due to unproven SCR on ND lignite, EPA finalized SNCR as BART. EPA subsequently proposed and finalized a reconsideration affirming SNCR.
Visibility information is for both Units 1 and 2. Cost information derived from WRAP's analysis.
Visibility information is for both Units 1 and 2. Cost information derived from WRAP's analysis.

Coal-fired boilers located at a paper mill. OH adopted a BART alternative to a BART evaluation based on the application of dry FGD, which would have yielded a combined emission limit of 24,931 lbs/day (one ton more). Glatfelter can meet the alternative BART by control device, alternate fuel, low S fuel, or retirement. No visibility or cost information provided. Company announced in 2016 it would convert to gas.

Cost information is a range for all 3 Units. Visibility information is for all three units.

Cost information is a range for all 3 Units. Visibility information is for all three units.

Cost information is a range for all 3 Units. Visibility information is for all three units.

Cost information is a range for both Units. Visibility information is for both units.

Cost information is a range for both Units. Visibility information is for both units.

Cost information is a range for both Units. Visibility information is for both units.

Cost information is a range for both Units. Visibility information is for both units.

OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	AEP/PSO Comanche Unit 1
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	AEP/PSO Comanche Unit 2
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	AEP/PSO Northeastern Unit 2
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	AEP/PSO Northeastern Unit 3
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	AEP/PSO Northeastern Unit 4
OK	76 FR 16168, 76 FR 81728	BART	SIP	Y	AEP/PSO Southwestern Unit 3
OK	76 FR 16168, 76 FR 81728	BART	FIP	Y	OG&E Sooner Unit 1
OK	76 FR 16168, 76 FR 81728	BART	FIP	Y	OG&E Sooner Unit 2
OK	76 FR 16168, 76 FR 81728	BART	FIP	Y	OG&E Muskogee Unit 4
OK	76 FR 16168, 76 FR 81728	BART	FIP	Y	OG&E Muskogee Unit 5
OK	76 FR 16168, 76 FR 81728, 78 FR 51686, 79 FR 12954, 79 FR 12944	BART	FIP	N	AEP/PSO Northeastern Unit 3
OK	76 FR 16168, 76 FR 81728, 78 FR 51686, 79 FR 12954, 79 FR 12944	BART	FIP	N	AEP/PSO Northeastern Unit 4
OR	76 FR 12651, 76 FR 38997	BART alt	SIP	Y	Boardman Unit 1
OR	76 FR 12651, 76 FR 38997	BART alt	SIP	Y	Boardman Unit 1
PA	77 FR 3984, 77 FR 41279	BART	SIP	Y	various

EGU	coal	94	NOx	LNB	0.15 lbs/MMBtu
EGU	coal	94	NOx	LNB	0.15 lbs/MMBtu
EGU	gas	495	NOx	LNB + OFA	0.28 lbs/MMBtu
EGU	coal	490	NOX	LNB + OFA	0.15 lbs/MMBtu
EGU	coal	490	NOX	LNB + OFA	0.15 lbs/MMBtu
EGU	gas	332	NOX	LNB + OFA	0.45 lbs/MMBtu
EGU	coal	570	SO2	SDA	0.06 lbs/MMBtu
EGU	coal	570	SO2	SDA	0.06 lbs/MMBtu
EGU	coal	572	SO2	SDA	0.06 lbs/MMBtu
EGU	coal	572	SO2	SDA	0.06 lbs/MMBtu
EGU	coal	490	SO2	SDA	0.06 lbs/MMBtu
EGU	coal	490	SO2	SDA	0.06 lbs/MMBtu
EGU	coal	584	NOx	LNB + MOFA	0.23 lbs/MMBtu
EGU	coal	584	SO2	DSI	0.40 lbs/MMBtu by 7/1/2014, 0.30 by 7/1/2018
various non-EGUs	various				

30 day roll	$2,600			4	1.28	1.46
30 day roll	$2,600			4	1.28	1.46
30 day roll	$303			4	0.40	1.04
30 day roll	$313			4	0.64	1.74
30 day roll	$314			4	0.64	1.74
30 day roll	$947			4	1.93	2.26
30 BOD	$1,239-$2,747	2.08	4.28	4	1.05	2.08
30 BOD	$1,239-$2,747	2.08	4.28	4	1.05	2.08
30 BOD	$1,276-$3,032	1.52	5.37	4	0.84	3.06
30 BOD	$1,276-$3,032	1.52	5.37	4	0.84	3.06
30 BOD	$1,544	1.70	5.80	4	1.09	3.06
30 BOD	$1,544	1.70	5.80	4	1.09	3.06
30 day roll	$1,263				1.44	
30 day roll	$2,458				0.84	

Visibility information is for both units.

Visibility information is for both units.

Visibility information is for both units.

Visibility information is for both units.

Visibility information is for both units. Visibility improvement is just for the addition of the SDA. Cost range covers two scenarios in which coals with different S contents were analyzed.

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Visibility information is for both units. Visibility improvement is just for the addition of the SDA. Cost range covers two scenarios in which coals with different S contents were analyzed.

Visibility information is for both units. FIP for Northeastern Units (not OG&E) replaced with SIP requiring one unit retirement by 4/16/16 with DSI at 0.40 lbs/MMBtu on remaining unit. Remaining unit also reduces capacity from 2021-2026 with ultimate retirement by 12/31/26.

Visibility information is for both units. FIP for Northeastern Units (not OG&E) replaced with SIP requiring one unit retirement by 4/16/16 with DSI at 0.40 lbs/MMBtu on remaining unit. Remaining unit also reduces capacity from 2021-2026 with ultimate retirement by 12/31/26. State proposed an alternative BART in which Boardman would retire 12/31/2020, resulting in a 10 year life. Addition of SNCR rejected at $1,816/ton with an additional 0.18 dv improvement at max Class I area.

Boardman was required to make improvements to the DSI system so that by 7/1/2018 the SO2 limit is 0.30 lbs/MMBtu, unless modified by an onsite test. Boardman must retire by 12/31/2020. SDA rejected at $5,535/ton (revised in final to $4,810/ton) with an additional visibility improvement at max Class I area of 0.4 dv.
Table 7 in the proposal includes a long list of Subject-to BART sources and their approved BART emissions limits. Unfortunately, no cost or visibility information is provided. It would be very helpful if this information could be added. There were a number of subsequent actions related to teh PA regional haze SIP, but non appear to result in any additional controls.

SD	76 FR 76646, 81 FR 24845	BART	SIP	Y	Big Stone Unit 1
SD	76 FR 76646, 81 FR 24845	BART	SIP	Y	Big Stone Unit 1
TN	76 FR 33662, 77 FR 24392	BART	SIP	Y	Alcoa Potlines 1 and 2, and anode bake furnace
TN	76 FR 33662, 77 FR 24392	BART	SIP	N	Eastman Chemical Kingsport Boilers 25, 26, 27, 28, 29
TN	76 FR 33662, 77 FR 24392, 77 FR 51739, 77 FR 70689	BART alt	SIP	Y	Eastman Chemical Kingsport Boilers 25, 26, 27, 28, 29
TX	82 FR 912	BART	FIP	N	Big Brown Unit 1
TX	82 FR 912	BART	FIP	N	Big Brown Unit 2
TX	82 FR 912	BART	FIP	N	Monticello Unit 1
TX	82 FR 912	BART	FIP	N	Monticello Unit 2
TX	82 FR 912	BART	FIP	N	Monticello Unit 3
TX	82 FR 912	BART	FIP	N	Coleto Creek Unit 1
TX	82 FR 912	BART	FIP	N	Harrington Unit 061B
TX	82 FR 912	BART	FIP	N	Harrington Unit 062B
TX	82 FR 912	BART	FIP	N	J T Deely Unit 1

EGU	coal	475	SO2	SDA	0.09 lbs/MMBtu	
EGU	coal	475	NOx	SCR + SOFA	0.10 lbs/MMBtu	
potlines and anode bake oven	coke		SO2	lower sulfur coke	3% S coke	
boilers	coal		SO2	SDA	0.20 lbs/MMBtu	
boilers	coal		SO2	convert B-23 Powerhouse to gas		
EGU	coal	573	SO2	wet FGD		0.04
EGU	coal	573	SO2	wet FGD	0.04 lbs/MMBtu	
EGU	coal	563	SO2	wet FGD	0.04 lbs/MMBtu	
EGU	coal	563	SO2	wet FGD	0.04 lbs/MMBtu	
EGU	coal	750	SO2	wet FGD upgrade	0.05 lbs/MMBtu	
EGU	coal	622	SO2	wet FGD	0.04 lbs/MMBtu	
EGU	coal	360	SO2	SDA	0.06 lbs/MMBtu	
EGU	coal	360	SO2	SDA	0.06 lbs/MMBtu	
EGU	coal	486	SO2	wet FGD	0.04 lbs/MMBtu	

30 day roll	$1,462		5		
30 day roll	$825		5		
30 BOD	$1,189	2.15	15	1.91	12.73
30 BOD	$1,127	2.18	15	1.94	12.92
30 BOD	$2,718	4.52	15	3.78	12.71
30 BOD	$3,031	4.49	15	3.92	13.03
30 BOD	$1,156 or less	4.63	15	3.72	11.94
30 BOD	$2,127	0.85	15	0.67	5.23
30 BOD	$3,909	2.91	15	1.17	4.83
30 BOD	$4,180	3.00	15	1.28	5.38
30 BOD	$3,898	0.76	15	0.49	4.79

Big Stone is < 750 MW and not required to follow the BART Guidelines. Visibility impacts presented for 2002, 2006, and 2007 with a variety of SO2 and NOx control combinations. However, no baseline impacts were presented, so neither baseline visibility impacts nor visibility improvement can be determined.

Big Stone is < 750 MW and not required to follow the BART Guidelines. Visibility impacts presented for 2002, 2006, and 2007 with a variety of SO2 and NOx control combinations. Baseline impacts presented for *max 98 percentile for 2002, 2006, and 2007* . Consequently no apples-apples baseline visibility impacts or visibility improvement can be determined.

Wet scrubbing rejected at $7,500/ton. No further cost or any visibility information provided.

No cost or visibility information provided. Not finalized and later modified with the option of a BART alternative finalized in 77 FR 70689.

As an alternative to the previously proposed (but not finalized BART determination for Boilers 25-29 (Option 1), Eastman can convert these units to gas (Option 2). Option 1 must be completed by April 30, 2017. Option 2 must be completed by the earlier of December 31, 2018 or the compliance deadline for the one-hour SO2 NAAQS.
Cost information different from RP FIP due to escalation and SO2 baseline updates. Visibility information is from CAMx modeling. CALPUFF max improvement: 3.83 dv for both Units 1 and 2.
Cost information different from RP FIP due to escalation and SO2 baseline updates. Visibility information is from CAMx modeling. CALPUFF max improvement: 3.83 dv for both Units 1 and 2.

Cost information different from RP FIP due to escalation and SO2 baseline updates. Visibility information is from CAMx modeling. CALPUFF max improvement: 4.87 dv for Units 1, 2, 3.

Cost information different from RP FIP due to escalation and SO2 baseline updates. Visibility information is from CAMx modeling. CALPUFF max improvement: 4.87 dv for Units 1, 2, 3.

Cost information different from RP FIP due to escalation and SO2 baseline updates. SO2 emission limit different that RP FIP due to updated annual emissions. Cost-effectiveness based on CBI so only a range for all of the scrubber upgrades can be shown. Visibility information is from CAMx modeling. CALPUFF max improvement: 4.87 dv for Units 1, 2, 3.

Cost information different from RP FIP due to escalation and SO2 baseline updates. Visibility information is from CAMx modeling. No CALPUFF visibility modeing available.
Visibility information is from CAMx modeling. CALPUFF max improvement: 0.74 dv for Units 061B and 062B.
Visibility information is from CAMx modeling. CALPUFF max improvement: 0.74 dv for Units 061B and 062B.

Visibility information is from CAMx modeling. No CALPUFF visibility modeing available.

TX	82 FR 912	BART	FIP	N		J T Deely Unit 2
TX	82 FR 912	BART	FIP	N		Welsh Unit 1
TX	82 FR 912	BART	FIP	N		W A Parish Unit 5
TX	82 FR 912	BART	FIP	N		W A Parish Unit 6
TX	82 FR 912	BART	FIP	N		Martin Lake Unit 1
TX	82 FR 912	BART	FIP	N		Martin Lake Unit 2
TX	82 FR 912	BART	FIP	N		Martin Lake Unit 3
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Sandow 4
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Martin Lake Unit 1
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Martin Lake Unit 2
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Martin Lake Unit 3
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Limestone Unit 1
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Limestone Unit 2
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Monticello Unit 3
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Big Brown Unit 1
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Big Brown Unit 2
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Monticello Unit 1
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Monticello Unit 2
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Coleto Creek Unit 1
TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Tolk Unit 171B

EGU	coal	446	SO2	wet FGD	0.04 lbs/MMBtu
EGU	coal	558	SO2	wet FGD	0.04 lbs/MMBtu
EGU	coal	734	SO2	wet FGD	0.04 lbs/MMBtu
EGU	coal	734	SO2	wet FGD	0.04 lbs/MMBtu
EGU	coal	750	SO2	wet FGD upgrade	0.12 lbs/MMBtu
EGU	coal	751	SO2	wet FGD upgrade	0.12 lbs/MMBtu
EGU	coal	752	SO2	wet FGD upgrade	0.11 lbs/MMBtu
EGU	coal		SO2	wet FGD upgrade	0.20 lbs/MMBtu
EGU	coal	750	SO2	wet FGD upgrade	0.12 lbs/MMBtu
EGU	coal	751	SO2	wet FGD upgrade	0.12 lbs/MMBtu
EGU	coal	752	SO2	wet FGD upgrade	0.11 lbs/MMBtu
EGU	coal	838	SO2	wet FGD upgrade	0.08 lbs/MMBtu
EGU	coal	851	SO2	wet FGD upgrade	0.08 lbs/MMBtu
EGU	coal	750	SO2	wet FGD upgrade	0.06 lbs/MMBtu
EGU	coal	573	SO2	wet FGD	0.04 lbs/MMBtu
EGU	coal	573	SO2	wet FGD	0.04 lbs/MMBtu
EGU	coal	563	SO2	wet FGD	0.04 lbs/MMBtu
EGU	coal	563	SO2	wet FGD	0.04 lbs/MMBtu
EGU	coal	622	SO2	wet FGD	0.06 lbs/MMBtu
EGU	coal	533	SO2	SDA	0.06 lbs/MMBtu

30 BOD	$3,712	0.63	15	0.30	3.65
30 BOD	$3,924	2.34	15	1.52	4.68
30 BOD	$2,417	1.70	15	1.52	8.17
30 BOD	$2,259	1.65	15	1.49	7.98
30 BOD	$1,156 or less	2.63	15	1.17	7.58
30 BOD	$1,156 or less	2.47	15	0.66	6.20
30 BOD	$1,156 or less	2.76	15	1.15	7.86
30 BOD	$368 - $910		3	0.31	0.48
30 BOD	$368 - $910		3	0.23	0.31
30 BOD	$368 - $910		3	0.20	0.26
30 BOD	$368 - $910		3	0.19	0.24
30 BOD	$368 - $910		3	0.14	0.21
30 BOD	$368 - $910		3	0.15	0.23
30 BOD	$368 - $910		3	0.18	0.22
30 BOD	$1,255		3	0.44	0.63
30 BOD	$1,257		3	0.44	0.63
30 BOD	$1,937		3	0.25	0.30
30 BOD	$2,170		3	0.23	0.28
30 BOD	$2,278		3	0.23	0.38
30 BOD	$3,178		3	0.09	0.13

Visibility information is from CAMx modeling. No CALPUFF visibility modeing available.
Visibility information is from CAMx modeling. CALPUFF max improvement: 0.72 dv for Unit 1 only.

Visibility information is from CAMx modeling. No CALPUFF visibility modeing available.

Visibility information is from CAMx modeling. No CALPUFF visibility modeing available.

Cost information different from RP FIP due to escalation and SO2 baseline updates. Cost-effectiveness based on CBI so only a range for all of the scrubber upgrades can be shown.
Visibility information is from CAMx modeling. No CALPUFF visibility modeing available.

Cost information different from RP FIP due to escalation and SO2 baseline updates. Cost-effectiveness based on CBI so only a range for all of the scrubber upgrades can be shown.
Visibility information is from CAMx modeling. No CALPUFF visibility modeing available.

Cost information different from RP FIP due to escalation and SO2 baseline updates. Cost-effectiveness based on CBI so only a range for all of the scrubber upgrades can be shown.
Visibility information is from CAMx modeling. No CALPUFF visibility modeing available.
Visibility information based on CAMx modeling using a clean background. Unlike BART FIP, only 3 Class I Areas considered.
Visibility information based on CAMx modeling using a clean background. Unlike BART FIP, only 3 Class I Areas considered.
Visibility information based on CAMx modeling using a clean background. Unlike BART FIP, only 3 Class I Areas considered.
Visibility information based on CAMx modeling using a clean background. Unlike BART FIP, only 3 Class I Areas considered.
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Visibility information based on CAMx modeling using a clean background. Unlike BART FIP, only 3 Class I Areas considered.

TX	79 FR 74818, 81 FR 296	RP	FIP	N	Y	Tolk Unit 171B
UT	81 FR 2004, 81 FR 43894	BART	FIP	Y		Hunter Unit 1
UT	81 FR 2004, 81 FR 43894	BART	FIP	Y		Hunter Unit 2
UT	81 FR 2004, 81 FR 43894	BART	FIP	Y		Huntington Unit 1
UT	81 FR 2004, 81 FR 43894	BART	FIP	Y		Huntington Unit 2
VA	77 FR 3691, 77 FR 35287	BART	SIP	Y		MeadWestvaco Boilers 6-9
VA	77 FR 3691, 77 FR 35287	BART	SIP	Y		MeadWestvaco Boilers 10
VA	77 FR 3691, 77 FR 35287	BART	SIP	Y		Gerogia Pacific Big Island boiler 4
WA	77 FR 30467, 77 FR 72742	BART	SIP	Y		Centralia Units 1
WA	79 FR 33438, 80 FR 70718, 81 FR 7710	BART alt	SIP	Y		BP Cherry Point Refinery R-1 Heater and R-1 Boiler
WA	77 FR 76174, 78 FR 79344, 79 FR 33438	BART	FIP	Y		Alcoa Intalco potlines
WI	77 FR 11928, 77 FR 46952	BART alt	SIP	Y		Georgia Pacific - Green Bay boilers B26 and B27

EGU	coal	543	SO2	SDA	0.06 lbs/MMBtu
EGU	coal	430	NOx	SCR	0.07 lbs/MMBtu
EGU	coal	430	NOx	SCR	0.07 lbs/MMBtu
EGU	coal	430	NOx	SCR	0.07 lbs/MMBtu
EGU	coal	430	NOx	SCR	0.07 lbs/MMBtu
industrial boilers with a single stack			SO2	scrubber upgrade	1,556 lbs/hr; 6,817 tpy
industrial boiler			SO2	fuel restriction	90% natural gas
indistrial boiler			SO2	scrubber	50 lbs/hr; 219 tpy
EGU	coal	702.5	NOx	SNCR + switch to PRB + retirements	0.21 lbs/MMBtu
refinery			NOx	NOx trading	R-1 Heater: 4.9 lbs/hr; R-1 Boiler: 0.05 lbs/MMBtu and 9.9 lbs/hr
aluminum smelter	coke		SO2	wet FGD	rejected due to affordability
paper mill	coal		SO2	wet FGD + elimination of coke	268 tons; 2,340 tons

30 BOD	$3,178			3	0.10	0.15
30 day roll	$2,697	4.61	22.96	9	2.95	12.95
30 day roll	$2,774	4.61	22.96	9	2.95	12.95
30 day roll	$2,871	5.13	18.37	9	3.85	13.74
30 day roll	$2,928	5.13	18.37	9	3.85	13.74

hour; annual

hour; annual

30 BOD	$2,162	5.45	35.76	12	1.99	13.73

24-hour

	$3,875 - $4,363	1.53	4.83	5	1.17	3.81

30 day roll; annual

Visibility information based on CAMx modeling using a clean background. Unlike BART FIP, only 3 Class I Areas considered.

EPA proposed both a BART alternative and a BART FIP and solicited comments on both proposals. EPA ultimately chose the FIP. Visibility impacts includes Units 1, 2, 3. Unit 3 is not BART-eligible. Visibility improvement only reflects controls on Units 1 and 2.

EPA proposed both a BART alternative and a BART FIP and solicited comments on both proposals. EPA ultimately chose the FIP. Visibility impacts includes Units 1, 2, 3. Unit 3 is not BART-eligible. Visibility improvement only reflects controls on Units 1 and 2.

EPA proposed both a BART alternative and a BART FIP and solicited comments on both proposals. EPA ultimately chose the FIP. Visibility information includes Units and 2.

EPA proposed both a BART alternative and a BART FIP and solicited comments on both proposals. EPA ultimately chose the FIP. Visibility information includes Units and 2.

Additional 15% control on existing scrubber. No cost or visibility information was provided.

The FR discussed NOx and PM limits also but no mention of whether additional controls would be required. Limits were also provided for a recovery furnace and smelt dissolving tank but again no mention of controls. No cost or visibility information provided.

No cost or visibility information provided. NOx and PM limits also provided but no mention of whether additional controls would be required. SO2, NOx, and PM limits also provided for boiler 5 but no indication if controls required. No cost and visibility information for boiler 5.

WA's BART determination also requires use of PRB coal, the optimization of the SNCR unit, and no coal by 12/31/2020 for one unit, and 12/31/2025 for the other unit.

Modified part of the original BART determination finalized in 79 FR 33438. BART alternative allows the R-1 Heater's NOx emissions to increase but the R-1 Boiler's NOx emissions decrease. R-1 Heater's NOx limit remains at 26 ppm on a 24-hr basis.

Visibility info based on 1 km grid modeling at 5 Class I areas. Additional 4 km modeling was done on 8 Class I areas but no visibility improvement information was provided. Wet FGD was selected as BART but was rejected due to affordability concerns.
Exhaust from boilers B24-B28 are combined in one stack, but only B26 and B27 are BART-eligible. SO2 emission rate was apportioned based on the B26 and B27 controls and applied to all the boilers. Three BART alternatives also approved with different combinations of NOx and SO2 tonnages with 30 day and annual limitations. No cost or visibility information provided.

WI	77 FR 11928, 77 FR 46952	BART alt	SIP	Y	Georgia Pacific - Green Bay boilers B26 and B27
WY	78 FR 34738, 79 FR 5032	BART	SIP	Y	Westvaco trona mine boiler NS-1A
WY	78 FR 34738, 79 FR 5032	BART	SIP	Y	Westvaco trona mine boiler NS-1B
WY	78 FR 34738, 79 FR 5032	BART	SIP	Y	Green River trona mine boiler C
WY	78 FR 34738, 79 FR 5032	BART	SIP	Y	Green River trona mine boiler D
WY	78 FR 34738, 79 FR 5032	BART	FIP	Y	Laramie River Unit 1
WY	78 FR 34738, 79 FR 5032	BART	FIP	Y	Laramie River Unit 2
WY	78 FR 34738, 79 FR 5032	BART	FIP	Y	Laramie River Unit 3
WY	78 FR 34738, 79 FR 5032	RP	SIP	Y	Jim Bridger Unit 1
WY	78 FR 34738, 79 FR 5032	RP	SIP	Y	Jim Bridger Unit 2
WY	78 FR 34738, 79 FR 5032	RP	SIP	Y	Jim Bridger Unit 3
WY	78 FR 34738, 79 FR 5032	RP	SIP	Y	Jim Bridger Unit 4
WY	78 FR 34738, 79 FR 5032	BART	SIP	Y	Naughton Unit 3
WY	78 FR 34738, 79 FR 5032	BART	SIP	Y	Naughton Unit 2
WY	78 FR 34738, 79 FR 5032	BART	SIP	Y	Naughton Unit 1
WY	78 FR 34738, 79 FR 5032	BART	FIP	Y	Wyodak Unit 1

paper mill	coal		NOx	OFA + recirculating SCR	110 tons; 977 tons
industrial boiler	coal		NOx	LNB + OFA	0.35 lbs/MMBtu
industrial boiler	coal		NOx	LNB + OFA	0.35 lbs/MMBtu
industrial boiler	coal		NOx	SOFA	0.28 lbs/MMBtu
industrial boiler	coal		NOx	SOFA	0.28 lbs/MMBtu
EGU	coal	550	NOx	LNB + OFA + SCR	0.07 lbs/MMBtu
EGU	coal	550	NOx	LNB + OFA + SCR	0.07 lbs/MMBtu
EGU	coal	550	NOx	LNB + OFA + SCR	0.07 lbs/MMBtu
EGU	coal	530	NOx	LNB + SOFA + SCR	0.07 lbs/MMBtu
EGU	coal	530	NOx	LNB + SOFA + SCR	0.07 lbs/MMBtu
EGU	coal	530	NOx	LNB + SOFA + SCR	0.07 lbs/MMBtu
EGU	coal	530	NOx	LNB + SOFA + SCR	0.07 lbs/MMBtu
EGU	coal	330	NOx	SCR	0.07 lbs/MMBtu
EGU	coal	210	NOx	LNB +OFA	0.26 lbs/MMBtu
EGU	coal	160	NOx	LNB +OFA	0.26 lbs/MMBtu
EGU	coal	335	NOx	LNB + SOFA + SCR	0.07 lbs/MMBtu

30 day roll; annual

30 day roll	$304		0.13	
30 day roll	$304		0.13	
30 day roll	$1,480		0.05	
30 day roll	$1,280		0.05	
30 day roll	$4,461	4	0.57	1.57
30 day roll	$4,424	4	0.53	1.48
30 day roll	$4,375	4	0.52	1.63
30 day roll	$2,635	9	0.37	2.28
30 day roll	$3,403	9	0.36	2.24
30 day roll	$3,320	9	0.35	2.17
30 day roll	$2,743	9	0.42	2.28
30 day roll	$3,469	6	0.60	2.48
30 day roll	$342	7	0.32	1.45
30 day roll	$444	7	0.26	1.15
30 day roll	$4,036	2	0.61	0.99

Exhaust from boilers B24-B28 are combined in one stack, but only B26 and B27 are BART-eligible. NOx emission rate was apportioned based on the B26 and B27 controls and applied to all the boilers. Three BART alternatives also approved with different combinations of NOx and SO2 tonnages with 30 day and annual limitations. No cost or visibility information provided.

Addition of SNCR rejected at $1,904/ton with a max improvement of 0.19 dv. No other visibility information listed. Cost and visibility information is per boiler (not cumulative).

Addition of SNCR rejected at $1,904/ton with a max improvement of 0.19 dv. No other visibility information listed. Cost and visibility information is per boiler (not cumulative).
Addition of SNCR rejected at $2,455/ton with a max improvement of 0.08 dv. No other visibility information listed.
Addition of SNCR rejected at $3,176/ton with a max improvement of 0.08 dv. No other visibility information listed.
Visibility information reflects revised values in final. No additional visibility information listed.
Visibility information reflects revised values in final. No additional visibility information listed.
Visibility information reflects revised values in final. No additional visibility information listed.
Visibility information reflects revised values in final using 0.5 ppb constant background ammonia. No additional visibility information listed. BART was LNB + SOFA, but RP/LTS added SCR. Unit 1 to install SCR by 12/31/2022.
Visibility information reflects revised values in final using 0.5 ppb constant background ammonia. No additional visibility information listed. BART was LNB + SOFA, but RP/LTS added SCR. Unit 2 to install SCR by 12/31/2021.
Visibility information reflects revised values in final using 0.5 ppb constant background ammonia. No additional visibility information listed. BART was LNB + SOFA, but RP/LTS added SCR. Unit 3 to install SCR by 12/31/2015.
Visibility information reflects revised values in final using 0.5 ppb constant background ammonia. No additional visibility information listed. BART was LNB + SOFA, but RP/LTS added SCR. Unit 4 to install SCR by 12/31/2016.
Visibility information reflects revised values in final using 0.5 ppb constant background ammonia. Odd that final visibility information indicates one Class I area had zero improvement, while not true for Units 1 and 2 (hence 6 Class I areas here). No additional visibility information listed. WY issued a permit to convert Naughton Unit 3 to gas by June 2018.
EPA proposed a FIP requiring SCR at $2,566/ton with max and cumulative visibility improvements of 0.46 dv and 2.10 dv (revised in final). This was rejected in the final and the SIP BART of LNB + OFA was approved.
EPA proposed a FIP requiring SCR at $3,109/ton with max and cumulative visibility improvements of 0.39 dv and 1.67 dv (revised in final). This was rejected in the final and the SIP BART of LNB + OFA was approved.
EPA proposed a FIP with LNB + OFA + SNCR. Based on comments and updated SCR costs, EPA changed that to LNB + OFA + SCR in the final. Insightful reasoning regarding use of cumulative benefit on 79 FR 5050.

WY	78 FR 34738, 79 FR 5032	BART	FIP	Y	Dave Johnson Unit 3
WY	78 FR 34738, 79 FR 5032	BART	SIP	Y	Dave Johnson Unit 4

EGU	coal	230	NOx	LNB + SOFA + SCR, or retirement	0.07 lbs/MMBtu
EGU	coal	330	NOx	LNB + OFA	0.15 lbs/MMBtu

30 day roll	$2,635		5	0.51	1.86
30 day roll	$137			0.71	

PacifiCorp can also retire Unit 4 by 12/31/2027 in lieu of installing SCR and only installing LNB + OFA at 0.28 lbs/MMBtu on a 30 day roll. No mention of when PacifiCorp must make this commitment other than the 3/4/2019 BART compliance date.

EPA proposed a FIP of LNB + OFA + SNCR at $2,686/ton with a max visibility benefit of 0.80. EPA rejected this in the final and approved the WY BART determination of LNB + OFA.